CURRICULUM DESIGNING, ADAPTATION AND EVALUATION

SES MR 02

MADHYA PRADESH BHOJ (OPEN) UNIVERSITY

CURRICULUM DESIGNING, ADAPTATION & EVALUATION

B.Ed. Spl. Ed

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MADHYA PRADESH BHOJ (OPEN) UNIVERSITY, Bhopal

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BLOCK – 1 : CURRICULUM DESIGNING

INTRODUCTION

This block is one of the most important blocks having the techniques of developing curriculum and transacting curriculum with the target students. Isn't that the main business of a teacher? In fact all other blocks are support units to this block because this is the block that will equip the teacher with competencies in teaching learning activities.

This block has 5 units. You will see that this is the biggest block among the 10 blocks of the course. The 4th unit is further divided into two `A' & `B'.

Unit-1 covers details on concept, principles and approaches of curriculum development. It also briefly talks about the recent trends in curriculum development.

Unit-2 contains information on the concept of Individualized Education Programme (IEP), origin, purpose and methods of developing IEP's. As every child with mental retardation is different from the other and having unique needs, IEP is a must for each child. Without that the teaching learning experience cannot be successful. The unit discusses in detail the various components of IEP with illustrations and examples. Sample IEP's have been arranged at the end of the unit. A teacher of children with mental retardation on the one side has to develop IEP's teaching, giving individualized instructions and on the other side she is expected to manage the group. Obviously it is a difficult task. This unit also gives certain guidelines of group instructions and update on use of technology.

Unit-3 consists of curriculum content and methods for early childhood special education programmes. The school age going for children begins at 3rd year and ideally we include 3-18 years as the school going age. It is important that when a disability is identified early in life, the child must be attended to with appropriate interventions to prevent further damage. This unit discusses early intervention with focus on a suitable model for India, which is a very rural country with high illiteracy rate and a large population belonging to low socio-economic status. The unit writer discusses a model for early intervention and early childhood education that she has tried out and has found working well. She also discusses the problems encountered, which have to have solutions found by the implementers.

Unit-4 as mentioned earlier has two parts discussing the curricular content from primary to pre-vocational levels. Part-A covers personal, social, occupational,

recreational skills across the level while Part-B is exclusively devoted to teaching of functional academics. While grouping children based on their age is important, planning for them according to their ability level is also of equal importance. You will agree that it is a difficult task. For these two units, unit writers have beautifully covered the continuum of skills to be taught from primary to prevocational level. You will also find that many activities include the preprimary areas also i.e. beginning from no competency to total independence, the teaching tips have been given. Functional academics is separately covered as Part-B because the teachers always have the problem of "how to teach academics", "how much to teach academic skills" and "what to do with children who do not learn academic skills". This unit gives the answers to these queries, which will help the teachers plan teaching of functional academics systematically.

Having covered children from pre primary areas to adolescents, we find that there is a group of children who, because of their severity of mental retardation cannot benefit optimally from the special educational programmes offered in schools. This is the group with profound mental retardation and multiple disabilities. A teacher has to be equipped to manage such children also. Therefore unit 5 gives guidelines on curricular content for children with severe/profound mental retardation and multiple disabilities. The activities listed include the team approach, home based training and center based training and wherever possible training in the special schools.

On completion of these five units you will find that mentally retarded children of school going age i.e. up to 18 years having mental retardation ranging from profound to mild levels are covered here. Briefly the teaching strategies and methods are also provided. Taking these as guidelines, you add your own originality and creativity to reach your student with mental retardation with the right kind of content, process and appropriate documentation of progress.

UNIT 1:MEANING, DEFINITION, CONCEPT AND PRINCIPLES OF CURRICULUM

STRUCTURE

1.1   INTRODUCTION

You are aware that in general education and special education, the three key factors in any curriculum are (1) the learners, (2) the teacher, (3) the content. The transaction of the content between the teacher and the learner is the instruction or the process. The content and process together, require very careful decisions if the student has to achieve his fullest potential in the specific area. The underlying principles of general education are applicable to children with special needs, with the teacher having a clear understanding of characteristics and potentials of the special needs of the student.

1.2   OBJECTIVES

On completion of the unit you will be able to:

- explain what is curriculum

- narrate aims and principles of curriculum development

- explain the various approaches to curriculum development

- appreciate the role of computer-assisted instruction.

1.3   DEFINITIION OF CURRICULUM

Neasly and Evans (1967) state that curriculum includes all the planned experiences provided by the school to assist the pupils in attaining the designated learning outcomes to the best of their abilities.

1.3.1   What is curriculum

The key words here are `planned experience' and `designated learning outcome'. The provider is the school – special school or special educator in this context and the receiver is the pupil – the disabled child here. It is also essential as noted above that a good curriculum should assist in achieving the best of the students' abilities. While keeping in mind the general curriculum principles, the special education curriculum should consider certain specific aspects.

1.3.2   Curriculum and instruction

Simply put, curriculum is the **content** to be taught and instruction is the **process** of teaching. In other words curriculum is `**what to teach'** and instruction is `**how to teach'**.

The transaction of the content between the teacher and the learner is instruction. This includes the methods, material, place of teaching, time of teaching and the person who teaches. For instance, a mentally retarded child will be taught bathing

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skills in the bathroom, perhaps by mother in the morning hours. There are various instructional methods- direct-teaching, classroom teaching through formal lectures, project method and learning by doing. All these help in learning.

1.3.3 Curriculum for students with mental retardation

There is a difference in the curriculum of children with sensory (visual/hearing) impairment and those with mental retardation. Those with sensory impairments have their intellectual capacity intact, and therefore can cope with regular education curriculum to a great extent with adaptations and plus curriculum. But those with mental retardation need specialized curriculum allowing for their individual differences. They cannot pass X or XII class like a blind or a deaf child. They need functional curriculum leading to 1.personal adequacy, 2. social competency and 3. economic independence. Depending on the degree of retardation they will achieve part or whole of the above three areas. The teachers of children with sensory impairment have an already designed content and the process alone is planned by them. The special teacher of mentally retarded persons have the additional responsibility of developing content and process.

1.4 PRINCIPLES OF CURRICULUM DEVELOPMENT

1.4.1 Aim

A good curriculum should aim at bringing out the maximum possible potentials of a child – may him be retarded or non-retarded. It has to take into consideration certain basic principles to arrive at a curriculum with achievable, practical goals.

1.4.2 Basic considerations and steps in curriculum development

A good curriculum influences the thoughts, feelings, ideas and opinions of the learner in the given context. A good curriculum developed on sound learning theory principles will consider the environmental influences on the teaching learning situations. This includes, 1. The government policies on education, 2. The school administrative policies, 3. support systems available, 4. family support , 5. Community resources, 6. Available teacher competencies, 7. Student's specific disability requiring special education and 8. The financial availability. Let us see these in a little more detail.

1. **Government policies**: Disabilities is an area of responsibility for more than one Government department. Health, Education, Welfare and Labour departments have their specific role to play in disability rehabilitation. In education, in India for instance, special education is the responsibility of Ministry of Social Justice & Empowerment whereas integrated education is under Department of Education, Ministry of Human Resource Development.

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The curricular decisions are influenced by the respective departments. It comes under as it is governed by the rules and regulations of the respective department. The National Policy on Education (1986) has specific mention on special education which has brought about changes in special education and integrated education. Similarly the Persons with Disabilities Act (1995) has certain mandates for education of the disabled persons, which is yet to be implemented. This is likely to have effect on teacher preparation, curriculum and instructions and other related areas.

2. **The school administrative policies**: Many schools have their own policies and philosophy though they follow a prescribed syllabus of CBSE, ICSE, State Board and so on. The curriculum for special education should take into account the schools policies. For instance, admission decisions on age restriction or type or severity level of disability will influence the content of special education curriculum.

3. **Support systems available:** Many children with disabilities require therapeutic, medical or counseling support. Not all schools are equipped with these facilities. Depending on the availability or non-availability of such facilities, the curriculum needs to include/make referral arrangements to ensure a wholistic curricular provision for the students who require these facilities.

4. **Family support:** Every special education programme needs an extension of school training at home for successful transfer of training. A good curriculum should include activities for home training, which the teacher transfers to the caretaker for training at home. Suitable alternative should be sought for residential schools.

5. **Community resources**: Normalization through integration and inclusion is the ultimate aim of special education, which cannot be accomplished without community participation. While developing the curriculum, the educational milieu should include the available community resources specific to each community for successful community participation and thus the spontaneous integration.

6. **Available teacher competencies**: While regular school teachers are sensitized to special education in recent years, certain areas in disabilities require specific teacher competencies which a trained teacher can offer. The curriculum should focus on objective judgement of the competencies of the teacher and alternatives for filling gaps.

7. **Student profile:** The disabilities vary in their nature and therefore, children with different disabilities require different content and process for

transaction, yet maintaining the general curricular demands to the extent possible. Education of children with hearing impairment, visually impairment or locomotor disabilities have the prescribed school curriculum with certain modifications – deletion of certain content (such as second language for hearing impaired children) and addition of disability specific educational requirement called the `plus curriculum' (such as Braille skills for visually impaired children). Functional curriculum is developed for children with mental retardation, which is, totally function oriented leading to personal adequacy, social competency and vocational preparation.

8. **Financial availability:** While the basic requirements are to be met, the extent of success in any curriculum development depends on how practical and feasible it is. The financial implications play a major role in the decision making of `how much' and `how far' regarding content and process decision.

Whether one follows the child centered or activity centered or wholistic approach, the above considerations are of utmost importance. The above eight factors are inter-related among themselves and they interact with the teaching learning situation between the teacher and the learner. Thus if anyone of them has a change, it will affect the total, learning environment and its other components.

1.5 APPROACHES TO CURRICULUM AND INSTRUCTION FOR STUDENTS WITH MENTAL RETARDATION

1.5.1 Over view

The curricular content of children with mental retardation requires a different focus. Due to the intellectual impairment, they cannot study like the other disabled children upto high school or beyond and hence the curricular focus here should be function oriented. This demands content as well as the process planned differently, considering each child with the unique characteristics, individualized educational programming (IEP) is required for each retarded child with the objective to achieve independence in his functioning in the age appropriate activities.

There are different approaches used and found successful for students with mental retardation.

Ideally, in special education, as in regular education, the curriculum should be derived from an analysis of the needs of society. Therefore, a good curriculum should focus on imparting social competencies to children with mental retardation so that they may perform as independently as possible in the community. With the trend toward integrated education, the curriculum for mildly retarded children is

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generally an adaptation of the regular education curriculum with a focus on vocational education. This training allows for appropriate job placement of the child when he/she grows up. These curricula include functional reading, writing, arithmetic, time, travel money and other related skills. Generalization or transfer of classroom learning to application of skills in natural environments is an important aspect of these curricula, as mentally retarded children often do not automatically generalize the skills they have learned.

Curricula used with children who are moderately and severely retarded emphasize training is functional activities. The content of the curricula are chosen from among the various tasks that have a high probability of being required in day-to-day living. These tasks include personal, social, occupational and recreational activities. Academic skills are incorporated when the children have the ability to learn them.

Behavioural approaches for increasing desirable Behaviours and decreasing undesirable Behaviours are currently in practice in most of the special educational units. The methods used include task analysis, modeling, shaping, chaining, prompting and fading and reinforcement. For the past two decades, behaviour modification techniques, based on operant conditioning principles have been widely popular and implemented in many school systems all over the world. These applications included aversive and non-aversive techniques. The use of aversive techniques were highly criticized as unethical. As rightly pointed out by Kazdin (1975) the target behaviour may be eliminated by aversive techniques, the consequences resulting directly form punishment may be worse than the original behaviour. Considering such views, `gentle teaching' was introduced. This included concepts and processes such as ecological manipulation, errorless learning, environmental engineering, teaching which considers modality strengths, and individualization and flexibility with the learner and staff. Special teachers in India are updated with such current concepts and trends through periodic in-service training workshops, to enable them to adapt teaching methods suitably.

1.5.2 · Ecological approach

As rightly pointed out by Wallace and Larsen (1978) if a child is to be assessed, it is essential that various environmental factors should be taken into consideration to determine their influence in either imitating or maintaining a skill or a behaviour. For instance, a mildly retarded child in an urban environment becomes a cause of concern to parents as early as LKG or UKG level, when the parents find him to be subnormal in school. On the other hand, in a rural area, even an adult with mild mental retardation might be well accepted without any problem. He might be performing the major work output expected of him in the rural area, which may be agriculture, dairy or poultry farming which his fellow men are doing. In rural areas, as even the normal persons do not get highly educated, he does not stand out to be

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called as retarded. Thus it becomes evident that environment plays a major role with regard to the competence required in a person to live with his fellowmen.

Laten and Katz (1975) list five phases for ecological (environmental) assessment.

(a)   Initial description of the environment and perception of the problem.

(b)   Expectation of the environment from the person to be assessed.

(c)   Description of the interaction and skills.

(d)   Summary of the above data.

(e)   Assessment of the child for skills and deficits and setting of reasonable expectation for the child based on the comprehensive information gathered.

If these aspects are considered, a good curriculum can be developed.

Need for an Ecology based curriculum

Countries like ours, due to various reasons, have not taken enough steps to develop our own programme to train the disabled individuals. Instead, there is a tendency to adopt the programmes developed in other countries. As these programmes are specifically developed to suit their needs and environment, often they do not meet our requirements.

A good function oriented curriculum is essentially an ecologically valid curriculum. It should include, activities that are age appropriate, community referenced, comprehensive, future referenced, efficient and integrated. Fergusson, Flannery, Wilcox, Jones and Mskowitz (1987) emphasise that the curriculum and programming should reflect the values and preferences of the child and family. Instead of programming a developmental sequence of skills presumed necessary for adulthood, it is valuable to include the critical features of everyday activities that a person needs to perform. In other words, the curriculum should incorporate the instructions of motor, sensory, communication, social, personal and self help skills into activities that are functional in the learner's natural environments, including his home, school, recreational and vocational settings (Baine 1986). It should also prepare the person for competence in present as well as future environments.

It is a well known fact that the skills learnt by an individual are maintained only if adequate opportunities are given to perform the skill. Therefore, to make sure that the mentally retarded person maintains the skills learnt, one has to include in the curriculum only those skills that are necessary for his daily living and that he has enough opportunity to perform the skill. Moreover, this skill has to be learnt in the natural environment with minimal simulations as far as possible so that the transfer of learning is minimized.

INDIVIDUALISED ADAPTATION STRATEGY

SELECT AN ENVIRONMENT FOR INSTRUCTION

DELINEATE THE ACTIVITIES AND SKILLS REQUIRED IN THE ENVIRONMENT (Nondisabled Person Inventory)

ASSESS THE PERFORMANCE OF THE STUDENT WITH DISABILITIES IN THE ENVIRONMENT

IDENTIFY PERFORMANCE DISCREPANCIES

DEVELOP INSTRUCTIONAL STRATEGIES

TEACH SKILLS DIRECTLY

USE ADAPTATIONS

1. Analyze the performance discrepancy
2. Generate ideas for an adaptation
3. Design then construct the adaptation
4. Teach the student to use the adaptation
5. Evaluate the effectiveness
6. Modify or fade use of the adaptation as abilities change

Multisensory approach

Multisensory approach refers to teaching using other senses in addition to hearing and vision. The method depends a lot on tactile sense for training. Montessori method is introduced by Madam Maria Montessori. She advocates education through sense training. The focus largely on ages 6 to 12 years which started with mentally retarded children and later enlarged the scope to normal children. Emphasis is on reinforcement of the senses so as to enable the children to discriminate between various stimuli that give rise to sensation of weight, colour, sound, touch, temperature and so on to aid in exercising their judgment and reasoning.

Special equipment are recommended for Montessori based training.

There are standard Montessori materials available in the market that would help in teaching through various senses. The teacher needs special training for using the method.

For academic skills, multi sensory approaches introduced by Grace Fernald called VAKT approach (visual-auditory-kinesthetic tactile) is effective. The phonetic approach of Orton – Gillingham is also widely used.

As Gearhart says, multi sensory approach is the "Deliberate use of three or more of the sensory channels in the teaching learning process"

1.5.4 Clinical/diagnostic prescriptive teaching (DPT)

Diagnostic prescriptive teaching: This is a method where the teacher assesses a student for his/her specific strength and/or weakness. Based on this educational diagnosis, she prescribes a programme for remediating the child's academic problem. This method is used effectively on children with learning disabilities and mental retardation. The steps in diagnostic perspective teaching involves: 1. Assessment, 2. Programme planning, 3. Implementation and 4. Evaluation. This is also known as clinical teaching cycle. A variation of 9 steps of DPT is given in Block 2 Unit 3 of SESM 3.

Assess the current
Level of Functioning
1

Modify 5

Plan 2
2

Evaluate 4

3
IMPLEMENT
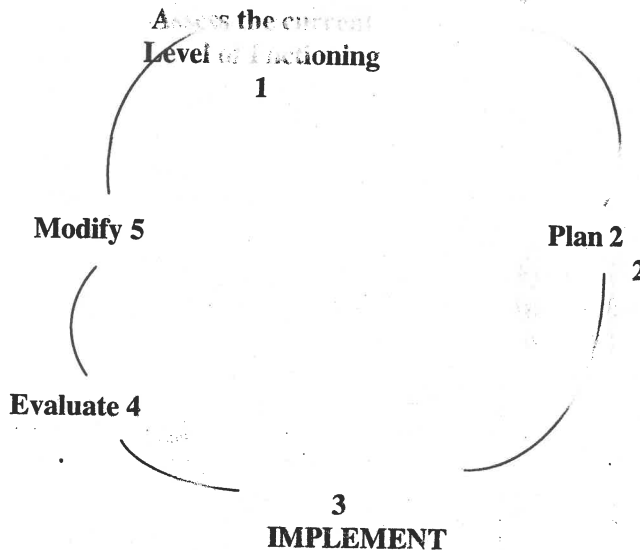
After <u>assessment</u> using the methods given earlier, the teacher will have to select priority goal and derive specific objective while <u>planning</u> her lessons. The plan should specify the time frame, expected level of achievement and the terminal and task materials. As per the plan evaluation should be done to see if the implementation is effective. If the teacher finds any problem in assessment, planning and implementation she would know through the evaluation, which in turn will help modifying her steps and implement again. By completing one such cycle in the selected area, she would have brought about change in the current level of functioning, which demands the cycle to continue.

Also known as remedial teaching or directive teaching this method is very effective in identifying specific deficits/errors in academic learning and correcting it.

1.6 COMPUTER ASSISTED INSTRUCTION (CAI) FOR STUDENTS WITH MENTAL RETARDATION

1.6.1 Suitability

Technology can play a powerful role at every step in a person's life, particularly in lives of those individuals who have special needs. Parents, teachers, and service providers for students at every level want to know what options could expand the potential for their child or student to interact, learn, and develop.

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Computer Assisted Instruction has several types of instructional programmes namely, drill and practice, tutorial, educational games, demonstration, simulation, problem solving and discovery learning.

i) **Drill and Practice** – These softwares are developed to help the students practice the previously learnt materials on computer, thus enhancing automatic level of responding. Though it provides over learning, repetition and immediate feedback it may end up to be monotonous and have limited ·cognitive demands.

ii) **Instructional games** – They are highly motivating as learning occurs through games. It increases concentration, coordination and dexterity, but it has the threat of children wanting to play the games and not actually meeting the educational objectives.

iii) **Simulation** – Experiences provided in simulations are analogous to real life situations, demanding active involvement of the student in problem solving. However, it may be difficult to integrate this component in academic curriculum, which is structured and rigid.

iv) **Tutorial** – This assists the child to work independently and provides for review of learnt materials. It has the facility to present instruction in sequential, step-by-step manner. Child's own motivation is a prerequisite for use of this software.

v) **Demonstration** – This allows the students and teachers to manipulate relationships among variables by pressing the keys and has presentation with colour, graphics and sounds that sustain interest.

vi) **Problem solving** – Computer as a tool to solve problems is used in many areas, especially, in calculations, where the student analyses the problem and writes executable programme to get desired results.

vii) **Discovery learning** – This can be integrated in games and simulations and it allows a child to learn by exploration and experiences.

1.6.2 Access and current trends

The technology advance in general education as well as special education is of recent origin. A pilot project on computer literacy was launched in 1985 by Department of Education in a number of regular schools. Presently in a number of states, regular school education includes computer literacy as a part of curriculum (Dutta, 1986). Word processor programmes in Indian languages have been developed for wider reach out. Production of adapted peripherals and add-on devices with indigenous softwares are rapidly increasing to suit the need of the disabled individuals. The biomedical engineering departments of colleges of

technology collaborate with special education programmes for development of suitable materials for the disabled persons in India. Following are some of the devices developed in India. (1) Writing aid for persons with motor disabilities was developed by Indian Institute of Research and Information Services, New Delhi (IRIS, 1994). (2) Communication aid to children with cerebral palsy called `Swarlipi', where an electronic interface provides access to computer using touch, movement of head, eye ball, blow energy or tongue (Anand, 1994). (3) The Indian Institute of Science (IISc), Bangalore has developed three gadgets for the visually impaired individuals to manipulate a computer. In addition, speech synthesizer, electronic Braille shorthand machine have also been developed (Nair, 1994). The National Institutes for the Handicapped are also experimenting with technology for the disabled individuals.

1.6.3 Advantages and limitations

As we all know, computers have changed the entire lifestyle of people. Those with disabilities are no exception. In the area of mental retardation, where individualized instruction is essential, the computer is a boon. It provides the individual learning time to student. After training the teacher may allow the child to use the computer on his own, and she can attend to other children. The interactive programmes play the role of the teacher too.

The child's self esteem is boosted when he proudly say he uses computers. Going with the principle of normalization it provides access to retarded children. The suitably selected softwares help as drill and practice for the content already taught by the teacher. The studies done at NIMH through multicentred data collection on use of CAI revealed that even severely retarded children benefit from the programme, the students attention span increases and distractibility reduces, the students do their routine duties well if promised of computer time thus serving as a good reinforcement.

Limitations

When we look at limitations, affordability stands out as a major problem. CAI seems out of reach for majority students. Indian softwares are minimum thus having limited access, especially so, for education of those with mental retardation. The NIMH has developed a few exclusive softwares and is in the process of developing more of mentally retarded persons. Multilingual characteristic of our country in another problem in quick reproduction and use of softwares.

Transfer of training from computer to daily living activities is difficult in mental retardation unless the teacher takes extra efforts. Moreover the teacher herself needs training in use of computers.

1.7   UNIT SUMMARY

Curriculum development refers to organization and implementation of suitable programme for the target learner with the objective to lead him towards independent living and bring out his potentials.

There are basic principles to be considered for curriculum development, which include learner characteristics, teacher competency, resources available, Government regulation on education and the philosophy of the school.

To train persons with mental retardation various approaches to curriculum development can be considered. Among them ecological approach, multi sensory approach and clinical teaching are popular.

Computers play an important role in special education. They have advantages as well as limitations. However, the trend is towards enhancing CAI programmes for retarded children.

1.8   CHECK YOUR PROGRESS

a)   Differentiate curriculum and instruction.

b)   What is clinical teachng cycle

c)   List the advantages of CAI

d)   List the limitations of CAI

1.9   ASSIGNMENTS

a)   Develop an ecological curricular guideline for mentally retarded children between 6 to 10 years keeping in mind their characteristic and their living style in rural areas. Assume a rural area of your choice.

b)   Compile software list for mentally retarded children.

1.10   POINTS FOR DISCUSSION/CLARIFICATION

After going through the unit you may like to have further discussions on some points and clarification on other. Note down these points in the space provided below:

1.10.1 Points for discussion

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

1.10.2 Points for clarification

_____
_____
_____
_____
_____
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_____

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UNIT 2:TYPES AND APPROACHES OF CURRICULUM DESIGNING

STRUCTURE

2.1 INTRODUCTION

Education and training of children with mental retardation includes: (a) assessment of current level performance of students, (b) planning an individualized educational programme based on assessment information, (c) systematic implementation, (d) evaluation of planned programme, and (e) selection of new activities for teaching or continuing the same programme based on evaluation. We need to state annual goals, short term objectives, procedures and schedules for evaluating goals and objectives in Individualized Education Programme (IEP). To make learning more meaningful and effective, variety of activities and materials are to be used during teaching. The technological advancements further facilitate in providing interactive learning environments to children with mental retardation in classrooms. For example, software packages, adapted computer peripherals, electronic mobility aids, hearing aids, and talking books, have helped persons with disabilities in reducing dependence on others. In this unit, we will see how to organize educational programme systematically to meet individual educational needs and quantify progress or identify and remediate problems in education.

2.2 OBJECTIVES

After going through the unit, you will be able to:

- describe the concept, development and importance of Individualized Education Programme (IEP).

- develop IEP for children with mental retardation.

- describe the types of instruction that can be planned in special classrooms.

- state the importance of instructional material and follow the guidelines in selecting/developing and presenting materials.

- demonstrate understanding of learning aids and functional aids.

- state the developments in the field of educational technology in general and with reference to special education.

2.3 INDIVIDUALIZED EDUCATION PROGRAMME (IEP)

Due to the intellectual impairment, children with mental retardation have less capacity to understand and learn skills when compared to non-disabled children. Further, individual differences between and within groups of

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children with mental retardation is so varied that there is a need to plan an individualized education programme for each child to meet the special needs. Right from the evolution of the concept of special education, the individualized education has been emphasized. However, significant procedural and programmatic changes occurred as a result of law enforcement in developed countries. The Education of All Handicapped children Act (PL 94-142) was enacted in November 1975 in USA. Another law, PL 99-457, ensures appropriate services to young children from birth to 2 years. However, the framework for the provision of early intervention services in PL 99-457 remains similar in many ways to that of PL 94-142. Both laws state that free and appropriate services should be provided to children with special needs. The vehicle by which such services are provided is an individually designed and written programme of services developed by a committee including the parents and safe-guarded by a system of due process. However, the requirements for provision of services to school age children differ from the provision of services to infants and toddlers with disabilities.

The main purposes of the act are:

- to assure free appropriate public education which emphasizes special education and related services designed to meet their unique needs.

- to see that the rights of handicapped children and their parents or guardians are protected.

- to assist states and localities to provide for the education of all handicapped children.

- to assess and assure the effectiveness of efforts to educate handicapped children.

    (For more details read the Chapter – Public Law 94-142 and Public Law 99-457, Strickland, B.B. & Turnbull, A.P. (1990) Developing and Implementing Individualized Education Programme).

This act later was amended to be called as Individuals with Disabilities Education Act (IDEA) 1990 to accommodate new and more aspects with changing trends.

2.3.1 Developing IEP

Parents, teachers and other professionals related to the interventional needs of a student participate in meetings of developing and evaluating Individualized Education Programmes. These meetings with parents serve

as a communication vehicle between parents and school personnel and also helps in resolving any differences between parents and the organization.

The written document (IEP) serves as a management tool. It helps in monitoring and evaluating the implementation of written plan in terms of student progress. IEP includes:

- Documentation of students' present/current level performance.

- Indication of specific services and type of programme to be provided including the time lines for delivering of services.

- Annual goals.

- Short term objectives.

- Procedures and schedules for evaluating goals and objectives.

2.3.2   The format for writing IEP

The educators use a specific format to write the programmes which include the demographic data, associated conditions, goals, task/activity, current level, objectives, materials, procedure and evaluation. It is written in two parts – Part A and Part B.

Part A

Demographic data – It includes the child's name, age, sex, education, mother tongue, address, parent's name, education, occupation, income.

Associated conditions – Apart from a specific disability, some children will have an additional disability. For example, a child with mental retardation may have visual disability or hearing loss or a child with cerebral palsy may have intellectual disability or child with intellectual disability or epilepsy.

General background information

The information is collected on child's family background (number of siblings, socio-economic educational status of family members), birth history, developmental history (developmental milestones), school history (previous schooling) and occupational history (previous record on vocational training and work). This information helps in planning IEP. This information is written very briefly focusing on educationally relevant details only.

Documentation of Present level performance

(Assessment)

This is an important component of IEP planning. Before teacher decides what content to be taught, assessment of current level performance of student is important. Comprehensive data is collected applying different methods of data collection (see SESM-1, Block-2, Unit-I for more details on assessment).

Setting goals

After completing assessment, the next step in planning is selection of annual goals and short term objectives.

Annual goals are the curricular content which a teacher expects her student to achieve over a period of one academic year.

Short term objectives are the specific curricular area derived from the goal which a teacher expects her student to learn over a period of short duration.

For each short term objective, separate plan is written for intervention. The content of the format (Part B) as follows:

Part B

Goal – The content, which a teacher expects her student to achieve over a period of time. The teacher may write a goal annually or term-wise.

Task/Activity – It is the specific statement of what task/activity to be taught.

Current level – The performance of the student with reference to the task/ activity to be taught is noted under current level.

Specific objective – It is the statement, which specifies 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).

Materials/Learning aids – An instructional planning is incomplete without selection of appropriate learning aids required for instruction. Learning aids make learning more meaningful and facilitates learning of a task/activity. The teaching aids used with one student in teaching an activity may not be effective with another student in teaching the same activity. Therefore, the teachers need to prepare/select a learning aid to suit an individual student's mode of learning.

Procedure – The details of how a task/activity will be taught is described under procedure. The procedure includes the strategies to be employed and reinforcers to be used to make learning effective.

Evaluation – The rate of student's achievement in a particular task against a set criteria after teaching is noted under evaluation. Evaluation procedures and record keeping are discussed in detail separately under the head evaluation (See SESM-3, Block-3, Unit-3).

2.3.3 Sample IEPs

Sample IEP – Part B-1

Task/Activity: Mixing rice and dall/curry and eating without spilling.

Current level: Follows instructions, eats dry food on her own. Eats mixed rice but spills it over.

Objective: When served rice and curry in a plate, Sunitha will mix rice and curry and eat without spilling, with 80% accuracy, after a period of three months.

Material: Plate, rice and curry, glass of water.

Procedure: Sunitha will be motivated to eat food on her own by showing her peers, who can eat independently. She will be trained to mix and eat rice on her own during lunch times, dinner time.

Initially, the trainer shows how to mix the rice and dall and eat while Sunitha observes. If Sunitha is not able to imitate the trainer, she will help sunitha to mix rice and dall by placing her hand and guiding sunitha to mix rice and dall to eat. The trainer gradually reduces help to make her learn to mix. In this manner the trainer uses different prompts to train sunitha and fades out gradually to see that she mixes and eats by herself.

Avoid junk foot between meals.

Task: Mixing rice and dall/curry and eating by herself the child: Sunitha   Name of

	Entry level	I	II	III	IV
1. Sit in front of the plate.	+	+			
2. Wait for rice and curry to be served.	+	+			
3. Extend hand towards plate.	+	+			
4. Mix sufficient amount of rice with curry without spilling.	pp	pp			
5. Take appropriate amount of food into fingers.	mp	gp			
6. Slightly bend forward and direct hand to mouth.	vp	vp			
7. Place food into mouth without spilling.	mp	gp			
8. Remove hand and take it back to plate.	+	+			
9. Close mouth, chews	+	+			
10. Swallows food.	+	+			
11. Complete the meal by repeating steps 5-9.	gp	gp			
No.of successes	6	6			
Percentage	55%	55%			

PART-B-2

Task/Activity: Reading three functional words (Colgate, Sunsilk, Red label)

Current level: Follows instructions, speaks in phrases. Can identify and read few alphabets, words. Recognizes pictures from book.

Objective: When shown the list of three words and asked Sunil to read, Sunil will read three words "Colgate, Sunsilk, Red label" 4/5 times correctly, after a period of 3 months.

Material: Word cards with names of common objects, colgate paste with cover, sunsilk packet, sunsilk bottle, red label packet, white paper, pencil.

Procedure: The need and importance of reading and writing common words will be explained to Sunil. He will be explained about various situations where he will be required to read names of shopping list and hence the importance to read will be emphasized. The names selected for reading were the items which they use at home.

    1. Real objects with covers/packets will be placed in front of Sunil and he will be asked to identify which paste/shampoo he uses at home, which brand tea powder is generally consumed at home. If required, prompts will be given to help him identify the objects.

2. **Place picture with word on one side and ask Sunil to match it to the corresponding picture with word placed on the other side in two-choice situation.**

Red
Label

Colgate

Colgate
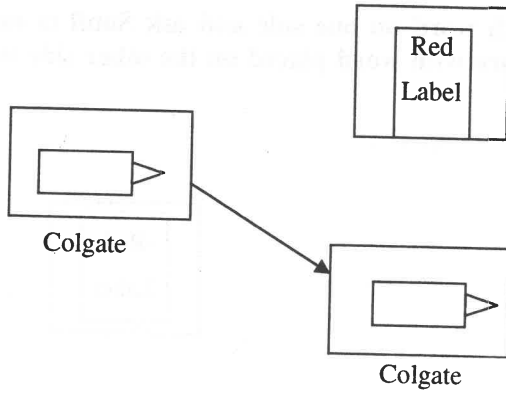
3. Place picture with word on one side and ask Sunil to match it to the corresponding picture with word placed on the other side in multi-choice situation.

Red
Label

Colgate

Colgate

sunsilk
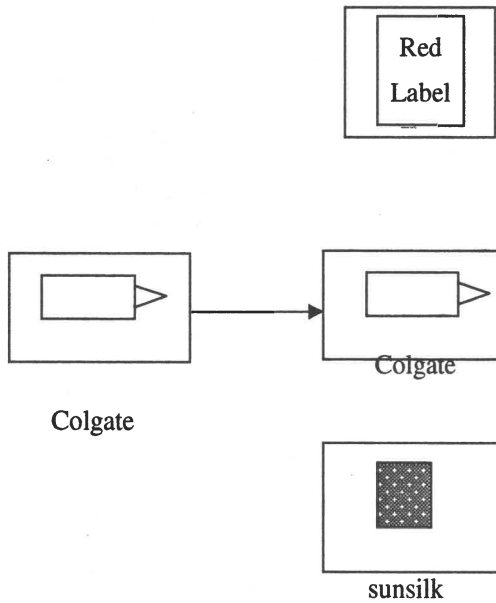
4.   Place picture with word on one side and Sunil will be asked to match it to the corresponding word in 2-choice, then multi-choice situation.

Red Label Tea

Colgate   Colgate

Colgate

Colgate

Red Label Tea

Clinic plus
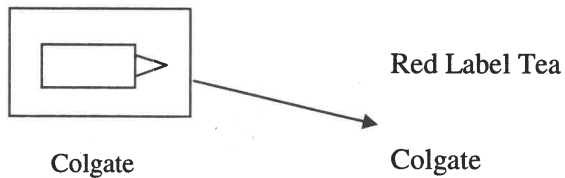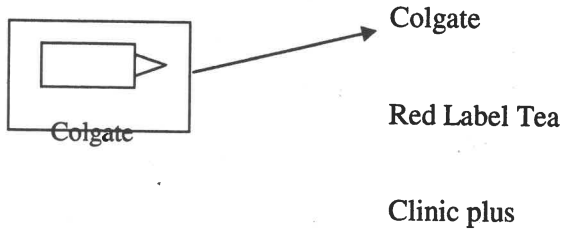
5. Place the word card of colgate on one side and ask Sunil to match it to the corresponding word in 2-choice and then in multi-choice situation.

Red Label Tea

Colgate

Colgate

Colgate   Red Label Tea   Sunsilk   Colgate
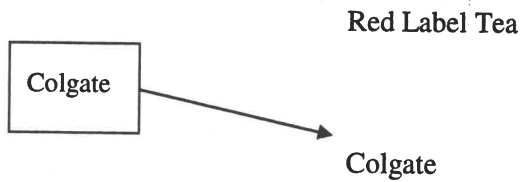
6. After Sunil learns to match the word in any situation, teach him to identify the word by pointing when read out, first in two-choice situation and gradually increase it to multi-choice situations.

Red Label Tea

Sunsilk

Colgate

Sunsilk

Liril

29
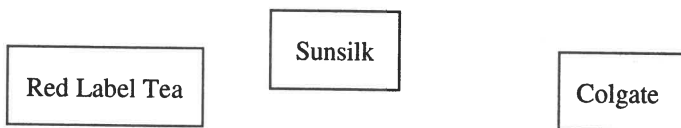
Colgate		Surf

7. Then ask Sunil to read the word "colgate" by showing the word card.

At every stage, Sunil will be encouraged to perform, by giving him suitable prompts whenever required. He will be appreciated for every successful attempt by social praise like "well done" etc. In the same manner, the other two chosen words "sunsilk" and "red label" will be introduced and he will be trained to read three words.

Task: Reading three words (colgate, sun silk, red label)	Entry level	I	II	III	IV
1. Match real object with word card (colgate).					
2. Match picture and word with picture and word (colgate) in two-choice situation.					
3. Match picture and word with picture and word (colgate) in multi-choice situation.					
4. Match picture and word with word card (colgate) in two-choice situation.					
5. Match picture and word with word card (colgate) in multi-choice situation.					
6. Match word card with word card (colgate) in two-choice situation.					
7. Match word card with word (colgate) in multi-choice situation.					
8. Match real objects with word cards (colgate and red label) in two-choice					

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	situation.					
9.	Match real objects with word cards (colgate, red label and sunsilk) in multi-choice situation.					
10.	Identify the word card (colgate) in two-choice situation.					
11.	Identify the word card (colgate) in multi-choice situation.					
12.	Identify the word card (colgate) in any situation.					
13.	Read the word (colgate) in any situation.					

Follow similar steps to teach Sunil to read the other target words (Red label, Sunsilk).

PART-B-3

Task/Activity: Writing three functional words (Words chosen – colgate, sunsilk, red label).

Current level: Follows instructions, speaks in phrases. Holds pencil, writes few alphabets on dictation.

Objective: When required, Sunil will be able to write the words colgate, sunsilk, red label, correctly by himself after a period of three months.

Material: White paper, pencil, word cards of chosen words.

Procedure: Sunil will be asked to name the real objects. The importance of learning to write is emphasized by explaining various situations like writing a shopping list, etc. Following activities will be introduced to teach Sunil to write the chosen words.

---

1. Sunil will be given a worksheet on which the three chosen words are written and he will be asked to trace on it by saying each letter. Sunil will be helped in tracing by holding his hand if necessary.

Colg	Sunsi	**Red Label**

Colgate	Sunsilk	Red Label
Colgate	Sunsilk	Red Label

2. Worksheet with words written on top and dotted words written below will be given and Sunil will be asked to join the dots to form the word by saying each letter sound of the word.

Colgate	Sunsilk	Red Label
Colgate		

3. Words are given on top and Sunil will be asked to copy the words by saying each letter sound aloud.

Colgate	Sunsilk	Red Label

4. Words will be given in the form of missing letters and Sunil will be asked to fill in the blanks. The following activities help sunil to learn the spelling and write words on his own.

a. Fill in blanks.

Col __ a t ___   S u n s i __ __

C o l g a __ __   S u __ s i __ __

C __ l g __ t __   S __ n s __ l __
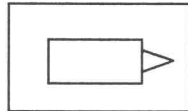
b.   Choose the correct word to complete
the word.

Colgate

Col

got   gate   get

33
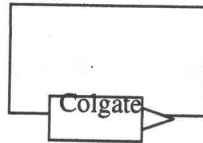
c. Place alphabets to form the word read aloud.

Colgate

| . | a | |

| g | e | o |

| t |
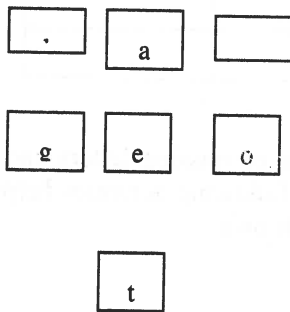
d. Complete word taking picture clue.

Col _____

e.

+ silk = _____

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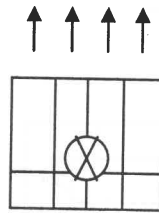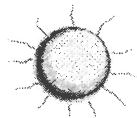
5. Finally, Sunil will be asked to write the words from memory on dictation.

6. Use learnt words in sentences.

I brush my teeth with _____ paste.

I wash my hair with _____ shampoo.

Task: Writing three words (colgate, sunsilk, red label)	Entry Level	I	II	III	IV
1. Trace the word "colgate".					
2. Join dots of the word "colgate".					
3. Copy the word "colgate".					
4. Write the word colgate by filling in missing letters.					
5. Write the word "colgate" on dictation.					

Follow similar steps to write the other target words "Sunsilk" and "Red label".

Evaluation of the IEP Part B will be written after three months or the specified time. The task analysis sheet will be compared to the objectives to see if 80% is achieved by the student. Suitably further plan will be made.

2.4   GROUP INSTRUCTION

Individualized instruction - one teacher to one student is often recommended. However, individualized instruction, i.e., instruction appropriate for a particular individual, can be achieved with one teacher to students in groups also.

When a teacher has to write a detailed IEP for a whole class, it becomes a load on her. Further, a special teacher for mentally retarded student may have a diploma after XII class and may not have language competency in writing while she may be a good classroom teacher. To ease her load without compromising on documenting needs, the assessment tools like FACP and MDPS provide programming sheet. These have provision for recording relevant individualized programming information briefly for each child and carry out classroom teaching.

Sequential instruction and/or concurrent instruction are used while teaching groups of students. In sequential instruction, the teacher rotates from one student to another briefly teaching each student individually. The students in the group may be taught the same or different skills. Alternatively the teacher may sometimes give general instructions or demonstrations at the same time to all students in the group before beginning sequential instruction. Usually, sequential methods of group instruction are more suitable to students functioning at a low level of ability.

In concurrent group instruction, several students are grouped close together. All students are taught by the teacher at the same time. This is the usual form of group instruction. The following points should be kept in mind when the teacher plans concurrent instruction.

a. Students in the group must be at the same range of general level of achievement.

b. They should be able to learn from the same methods of teaching and they must have relatively well developed language skills (verbal or manual) and they must be able to imitate a teacher's demonstration.

Depending upon the group and ability of students, the teacher can practice either sequential instruction or concurrent instruction.

2.4.1 Lesson Plan

A lesson plan is the blue print for all that will be taking place within a given period of time for teaching a particular skill/concept. As discussed earlier the lesson plans are prepared either for sequential instruction or concurrent instruction. The teacher can plan individualized instruction, small group instruction and large group instruction in her class. However, lesson plan is prepared for individual child's level.

Eg. If it is a maths class and the teacher intends to teach counting objects, she has to consider the current level of children in the group.

• One child may not have counting ability at all.

• One child may be able to count upto 2.

• One child may be able to count upto 5.

Here, we see that if a teacher goes into this class to teach number value without planning and preparation before hand, she will be at a total loss as to what to do with each child or may land up

teaching the same thing to all the children. Here a lesson plan comes into the picture. This lesson plan will help the teacher to be ready before hand.

(a)   What she will be teaching?

(b)   What will be the classroom arrangement?

(c)   How will, she be starting the lesson?

(d)   What materials and methods she would be using?

(e)   How she would be teaching?

(f)   What reinforcers she would be using?

(g)   How she would be evaluating the lesson?

(h)   How will she conclude the lesson?

2.5   INSTRUCTIONAL MATERIALS

Instructional materials are those required for teaching skills to children with mental retardation. Different types of materials – concrete objects, models, pictures/flash cards, audiovisuals, puppets, charts, software packages, play material, etc. are used by teachers in classrooms during teaching. It has been noted in the literature that teaching materials and aids promote multi-sensory learning. As students use/manipulate the material by themselves, it creates an interactive environment between the teacher and the students. In addition, students need a novel experience which sustains their interest. Therefore, a teacher has to plan a variety of activities using material to make the teaching learning environment more conducive for learning.

2.5.1   Learning aids and functional aids

As education of children with mental retardation aims at preparing children to be independent as far as possible, it becomes essential to identify certain aids for some children, which facilitate independent functioning in the community.   For example, teacher while teaching names of vegetables may use the concrete vegetables, models, flash cards, charts (learning aids) for teaching the content. But for a student who is non-verbal and has to go to a vegetable shop to buy, the teacher may provide a pocket picture album to remember or to ask the shopkeeper, the items. The picture album (functional aid) can have many more pictures for facilitating communication of the student. The function of the learning aid seizes once the student learns the concept whereas the need for functional aid continues as the student requires it for independent living (eg. Clothing adaptations).

Guidelines for using learning aids

It is apparent that the material which interests one child may not interest another child. Hence, a teacher has to be always observant, and vigilant to notice such individual difference among children and should select and/or develop the teaching learning material to make learning effective for each child.

Following are some of the general guidelines to be followed:

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- Use concrete material as far as possible in the initial stages (acquisition) of teaching the concepts.

- Select pictures/flash cards/charts which look like real or near real objects.

- Use age appropriate teaching learning material.

- See that the material which you select are appropriate to the topic which you are going to teach.

- The material selected or developed should be such that it can be used for teaching many concepts.

- Select a variety of materials and plan a number of activities with them to provide novelty.

- Present the material in such a way that all students can have a clear view of the material.

2.6   EDUCATIONAL TECHNOLOGY

The educational programmes for persons with mental retardation aims at preparing them for independent living in the community. Due to the intellectual impairment, persons with mental retardation have limitations in acquiring knowledge and skills like non-disabled persons. Among them some may have multi disability having loss of vision or hearing or epilepsy along with mental retardation. These children will have much more limitations in learning skills than the other group of children with mental retardation. However, the advancements in technology has made it possible to innovate electronic devices that supplement and/or support persons with mental retardation in learning and leading their lives meaningfully and fruitfully. To name some, electronically operated wheel chairs, walking aids, hearing aids, adaptations in computer peripherals, educational software are found to be of immense help to the needy persons.

Apart from electronic technology, the information technology (IT) has brought a revolution in their life and life styles. The information, which was accessible to only a few people before, is accessible today to many people through Internet web sites. Professionals, family members and others working in the field of mental retardation are able to compile information on new developments, trends and innovations in teaching process of children with mental retardation through surfing relevant web sites. This helps them in updating the knowledge to keep pace with the changes and advancements taking place in the field of special education. Further, the inventions, both in electronic and information technology have paved way to distance mode

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of education. With this a large number of persons in remote and inaccessible areas can avail educational facilities.

2.6.1 Use of Educational Technology

Technology is the application of scientific knowledge to the practical tasks of life. If properly developed technology could make education more productive, individualized and powerful, for learning more recent information, make instruction more scientifically based and access to education for all.

Educational technology is defined as a complex, integrated process involving people, procedure, idea, device and organization for analyzing problems and devising, implementing, evaluating and managing solutions to these problems, involved in all aspects of learning (Thomas, 1987).

One of the purposes of educational technology is to promote the efficacy of education, Educational technology is used forL

- Effective instruction
- Facilitating individual differences
- Providing equal educational opportunities
- Preservation of knowledge
- Transmission of knowledge
- Imparting quality education
- Educational planning
- Pre-service and in-service teacher education and
- Finding solutions for problems in Indian educational systems

2.6.2 Educational Technology in India

Technology includes 1. hardware/device or media, 2. software or programmed instruction, 3. planning, designing and analyzing programmes.

The growth and development of educational technology is based on the new innovations and advancements in technology. For example visual instructions (pictures, slides, audio, video films) were largely developed with the invention of photography, radio, tape recorder, television, slide projector and overhead projector. The recent development in educational

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technology is the transmission of audio and televised instruction and/or information by communication satellites. In addition, the invention of information technology made it possible to have an access to information in all spheres of life.

In 1973, units were established at NCERT, and in the Department of Education at Delhi to develop educational technology. In addition, educational technology cells were established in different states of India and the four Regional Colleges of Education at Bhopal, Ajmer, Mysore and Bhubaneswar. Agencies such as University Grant Commission (UGC) and Indira Gandhi National Open University (IGNOU) are engaged in the creation and use of educational technology in general, and educational media in particular and the programmes are transmitted through communication satellites. Dooradarshan and All India Radio are being used to telecast the educational programmes effectively.

Another important milestone in the field of technology is the invention of information technology. In the present world, computers have found place in every field. They have become an essential medium for instruction in face to face and distance mode, planning, administration and analysis of teaching programmes and systems in the field of education. In the near future having computers at home may become a dire necessity due to rapid changes happening in the field of information technology. In addition, Internet is the world's largest computer net working system which serves as an information provider, publisher and instructor. It is the cheapest and fastest means of access to information.

2.6.3 Technology and Special Education

Education in its broader sense means providing environments and opportunities to students to acquire knowledge and skills and apply those skills to lead a productive independent life in the society. The same goals of education are applicable to both disabled and non-disabled persons. However specially trained personnel, special curriculum, methods and materials, instruction and educational settings are required for optimum learning among children with disabilities.

Due to the disabilities, they will have problems in mobility, communication, education, (learning academics) and employment. The innovations and advancements in technology made it possible to device aids and appliances, learning materials or assessment devices, to reduce the limitations and to prevent the disability. For example, computerized wheel chairs, walking aids, hearing aids, talking books, talking telephones, software instructional

programmes and adapted computer peripherals are developed and are used in education and training of persons with disabilities. However, a limited number of persons with disabilities have access and affordability to such devices. Efforts are being taken by Government and non-Governmental organizations to make these devices available to people with disabilities in rural areas. In addition, R&D activities have been taken up by Government organizations and NGOs in developing and devising materials using latest technology. One such effort was taken by the Dept of Special Education, National Institute for the Mentally Handicapped, Secunderabad as a part of R&D activity to develop software packages for educational purposes of persons with mental retardation. The software packages developed include, a) Literacy, b) Numeracy, c) Number skills, d) My country, e) Living and non-living things, f) Health and safety and g) Community utilization. These are developed exclusively for persons with mental retardation, keeping in mind their limited intellectual abilities. After development of the packages, multicentered field testing in various parts of the country in special schools for persons with mental retardation is conducted and modifications are made based on the data and feedback. The recent packages are being funded by S&T mission mode of Ministry of Social Justice & Empowerment, Government

of India.

2.7   UNIT SUMMARY

Education of children with mental retardation involves assessment of current level of functioning of students, planning an individualized education programme, implementation of planned programme and evaluation and recording of the performance/achievement of students and informing the progress to parents/family members. Important feature of programme planning is that the parents/family members take up a partnership role in IEP meetings in deciding the content to be taught to the students.

- The contents of IEP include documentation of students present/current level performance, indication of specific services and type of programme to be provided, annual goals, short term objectives, and procedures and schedules for evaluating goals and objectives.

- Individualized instruction, small group and large group instruction are commonly practiced in special schools by the teachers.

- Sequential instruction and or concurrent instruction are used while teaching groups of students as per the individual requirement and based on the homogeneity of the group.

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- Appropriate teaching learning materials and functional aids are selected and developed for the purpose of teaching various concepts and for functioning independently in the community.

- Electronic technology and information technology have brought a revolution in the life and life styles of persons with disabilities.

- Educational software packages are developed allover the world and also in India for teaching academic skills to children with mental retardation.

2.8   CHECK YOUR PROGRESS

1. State the purposes of writing IEP.

2. Explain the content of IEP format.

3. Explain different types of instruction carried out in classrooms for children with mental retardation.

4. What is educational technology? What are the uses of educational technology.

2.9   ASSIGNMENT

Select two students of any age between 3-16 years for a case study. Conduct assessment, and plan an individualized programme, implement and evaluate the performance of the two selected cases. Write the case study report on the lines of sample case study report given in Annexure-1.

2.10 SAMPLE CASE STUDY

Name :   XXX

Age :   8 years

Regn.No.:   950/2000

Languages known: Telugu

Father's Name: XX XX XX

Occupation: Electrician (Private Job)

Mother's Name: XX XX XX

Occupation: House wife

Socio-economic status: 950/- p.m.

Address: XX XX XX XX

           XX XX XX XX

           XX XX XX XX

Presenting complaints:
1. Can't speak in sentences.
2. Poor memory.
3. Poor in studies.
4. Bites his hands.
5. Doesn't sit at one place.

Birth History: Mother has gone for regular anti-natal check-ups. It was a full term normal delivery at the hospital. Birth cry was delayed and birth colour was normal and weight was 2.5 kg. Immunization was given as per schedule. Nothing significant in the post natal history.

Family history: Non-nuclear intact family. No history of mental illness, mental retardation and epilepsy as reported. There is a history of consanguineous marriage.

Developmental history: All the milestones were delayed but a gross developmental delay was there is speech and language area.

School history: He was admitted into a normal school at the age of four years. Present he is in LKG.

Behaviour problems: - stubborn.
                  - bites hands.
                  - Makes sounds like ooo, coooo.
                  - Doesn't sit at one place.

Diagnosis: Mild mental retardation.

EDUCATIONAL ASSESSMENT

Functional Assessment Checklist for Programming (FACP) was used for the assessment. The information was collected mainly by observing and testing the child and some information was given by the parents. Master XS aged eight years falls under the group Primary I. Since the score under the academic domain of Primary I was less than ten percent, the items were taken from preprimary checklist for the academic domain. The following is the report based on the FACP.

Personal: He can climb up and down stairs placing alternate feet. He can turn bolt and open the door when he wants to go in/out of the room. He can war and remove undergarments. He can identify the toilet, and can clean

himself after defecation. Needs prompts in flushing after toileting. When given the food, eats a full meal without spilling. Asks for more curry. He identifies brush and paste, brushes his teeth but needs help while cleaning tongue and washing face with soap. Can pour water on the body. Does not apply soap on the body. Needs help in bathing, combing hair and applying powder.

Social: Participates in a group game in which 4-5 children are involved. Does not wait for his turn while playing games and does not share the play material. Does not maintain appropriate manners when taken to social functions. He takes care of his own belongings in school. He does not name body parts when pointed to.

Academics: He is aware of more and less concept. He does not name body parts when pointed to. He can hold pencil and scribble. Does not colour with a crayon. Does not match colours like red, green, blue, yellow. Does not match big and small objects. Does not count the objects correctly. Does not match sizes. He can differentiate money form other objects. Does not match coins and not aware of the comparative value of coins. He identifies the watch/clock, and associates it with time. Differentiates between morning and night. Does not point to the animals, fruits in pictures when asked.

Occupational: He sorts out vegetables and places them in the container. Brings the washed vessels and puts them in their appropriate places. Places plates and glasses for washing after eating. Does not peel the vegetables. Does not dust the furniture and other items in the house. Brings water in a small bucket.

Recreational: He plays games with 2-3 children. He likes to watch TV programmes for 20-30 minutes. Does not draw simple figures. Does not cut and paste the pictures. Looks through the picture books. Goes out for a walk and visits friends house which are nearby and he likes to go for shopping with adults.

FACP PROFILE PRIMARY-I						GROUP –		
Personal	Social		Academic (P.P.)	Occupational		Recreational	
						Indoor	Outdoor
1.	1.	1.	27	1.		1.	1.
2.	2.	2.	28	2.		2.	2.
3.	3.	3.	29	3.		3.	3.
4.	4.	4.	30	4.		4.	4.
5.	5.	5.	31	5.		5.	5.
6.	6.	6.	32	6.		6.	6.
7.	7.	7.	33	7.		7.	7.
8.	8.	8.	34	8.		8.	8.
9.	9.	9.	35	9.		9.	9.
10	10	10.	36	10.		10.	10.
11	11	11.	37				
12	12	12.	38				
13	13	13.	39				
14	14	14.	40				
15	15	15.	41				
16	16	16.	42				

17		17		17.		43								
18		18		18.										
19		19		19.										
20		20		20.										
21		21		21.										
				22.										
				23.										
				24.										
				25.										
				26.										

PERFORMANCE LEVEL

S.No.	AREAS	NO.OF ITEMS	ENTRY LEVEL
1.	PERSONAL	21	11 (52%)
2.	SOCIAL	21	12 (57%)
3.	ACADEMIC	44	15 (35%)
4.	OCCUPATIONAL	10	4 (40%)
5.	RECREATIONAL	20	10 (50%)

PROGRAMME PLANNING

PART-A

Name :   XX XX XX
Regn.No.: 950/2000

Age :   8 Years

   Date of filling IEP: 19.07.2000

Address: XX XX XX
   IEP No.: 1

   XX XX XX

   XX XX XX

   XX XX XX

Mother tongue :   Telugu

Significant information :   Mild mental retardation

Associated conditions : Hyperactive – Does not sit at one place for
more than

three minutes.

Does not complete given activities.

Goals :

ANNUAL GOALS

PERSONAL:

1. Taking bath on his own.
2. Buttoning and unbuttoning the shirt.
3. Brushing his teeth.

ACADEMICS:

1. Naming Red, Green, Yellow and Blue

Reading	Writing
1. Read his name	1. Write his name
2. Read the animal names (5)	2. Write the animal names (5)
3. Read the fruits names (5)	3. Write the fruits names (5)

Numbers	Money	Time	Length	Weight/Mass
1. Counting correctly upto 15. 2. Writing numbers upto 15.	1. Naming Rs.1, Rs.2, Rs.5, Rs.10.	1. Telling time in hours.	1. Naming the big and small. 2. Telling far and near.	1. Telling more and less comprehension. 2. Telling heavy and light articles.

SOCIAL:

1. Waiting for his turn during playing.
2. Saying namasthe to the guests.
3. Sharing material while playing.
4. Telling his name when asked.

OCCUPATIONAL:

1. Washing the plate and glass after eating.
2. Dust the furniture with cloth.

IMMEDIATE PRIORITY GOALS

Personal

1. Unbuttoning the shirt.
2. Buttoning the shirt.
3. Applying paste on the brush.

Social

1. Saying Namasthe to the guests.

Academics

1. Identifying red, green, yellow, blue colours.
2. Counting correctly upto 5.

Occupational

0. Washing plates and glasses after eating.

Staff Responsible: xx xx xx xx xx

INDIVIDUALIZED EDUCATIONAL PROGRAMME

DATE OF PROGRAMMING: 19.07.2000
IEP NO: 3

DATE OF EVALUATION: 05.02.2001

PEOPLE RESPONSIBLE: xx xx xx, Parents

PART-B

SKILL: Applying paste on the toothbrush.

CURRENT LEVEL: Identifies brush and paste. Can hold the brush and tooth paste.

OBJECTIVE: On waking up and before going to bed, X would apply paste on the tooth brush on his own to brush teeth after the training period of three months.

MATERIAL NEEDED: Tooth brush and tooth paste.

PROCEDURE: The trainer would take the child to the wash basin. The trainer would hold the hands of child from behind and make the child to hold the brush in one hand and hold the paste on the other hand and the trainer would apply pressure on the child's hand slightly so that paste comes out of the pouch. The trainer would remove the pressure on the child's hand after the application of paste. Slowly as the child learns to apply paste the physical and verbal prompts are reduced. The child would be reinforced after every successful completion of the task.

EVALUATION: After 3 months of training period X is able to apply paste on the brush with an achievement of 82%.

XX XX XX

STUDENT TRAINER

TASK ANALYSIS RECORD

Name of the child: X

Task: Applying paste on the brush

Tasks	Date												
	Session												
	Trial												

1. Go to the Basin.	
2. Hold the paste with right hand.	
3. Open the cap of the paste with left hand.	
4. Put down the cap.	
5. Hold the brush with the left hand.	
6. Bring the paste near the bristles of brush.	
7. Apply pressure with the thumb/index finger on the paste tube and move the right hand till the end of the bristles.	
8. Put down the brush properly.	
9. Pick up the cap of the paste.	
10. Close the cap of the paste.	
11. Put back the paste in its original place.	
12. Hold the brush with right hand and brush the teeth.	

Key

No.of successes

Percentage

Remarks

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SKILL: Applying paste on brush

The skill was taught to him in 12 sessions. His entry level was 0. He showed gradual improvement upto 5th session. There were fluctuations in the progress due to his hyperactivity.   AT the end he showed an achievement of 82%.

IMPLEMENTATION

The training programme was implemented in the following way.

Task	No.of Sessions	Duration of one session (minutes)	Situation	People Responsib le	Instruction used	Reinfor-cement
Unbutt oning the	1 2	4 0	Home. Institute.	Parents and student	Individua lized	Good.

shirt.				trainer		
Button ing the shirt.	1 2	4 0	Home. Institute.	Parents and student trainer	Individua lized	Good.
Apply paste.	1 2	4 0	Home.	Parents.	Individua lized	Good.
Identif y red, green, yellow , blue.	1 2	6 0	Home. Institute.	Parents and student trainer	Individua lized and group	Good and 10 minutes for play.
Count correct ly upto 5.	1 2	6 0	Home. Institute.	Parents and student trainer	Individua lized and group	Good and 10 minutes for play.
Greeti ng.	1 2	3 0	Home. Institute.	Parents and student trainer	Individua lized	Good.
Wash place and glass.	1 2	4 5	Home Institute-canteen	Parents and student trainer	Individua lized	Good & chaco-late

EVALUATION

The rate of students achievement in a particular task against a set criterion after the training is noted under evaluation.

The number of sessions taught to him were 12 sessions. Evaluation was done on 5-2-2001. Formative evaluation was done by noting the performance on task analysis sheets every week and the summative evaluation was done by using FACP. The number of tasks taught to him were seven and each session was completed in one hour.

2.11 POINTS FOR DISCUSISON/CLARIFICATION

After going through the Unit, you may have some doubts which need further clarification or you may have some of your own observations. Note these here.

2.11.1 Points for discussion

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2.11.2 Points for clarification

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UNIT 3:CURRICULUM DOMAINS - PERSONAL, SOCIAL, ACADEMICS, RECREATIONAL AND COMMUNITY LIVING

STRUCTURE

3.1   INTRODUCTION

This unit is totally an experience based write up on early intervention and preschool education. It describes the process, difficulties and linkages. Though the age range of 0-3 years is not directly in the perspective of a special educator, this unit is a base for starting of preprimary education for children with developmental delay and/or mental retardation.

Research in the last quarter of the twentieth century with infants and young children has indicated the importance of the first few years of life in determining the overall course of development of the child. It provides new information that infants are capable of learning prior to neurological maturation, and that learned behaviour encourages the infant to engage more quickly and meaningfully in the environment.

Several workers stress the plasticity and adaptability of the Central Nervous System during infancy. The nervous system adapts itself anatomically and functionally to new situations emerging from developmental and environmental influences as well as from injuries.

Carefully designed outcome studies conclude that an infant's competence in cognition, language and socialization is hastened by a period of enrichment.

The advantage of enrichment programmes.

(a)   They provide both infant and parent to develop to full potential;

(b)   They strengthen the natural interactions between infants and parents which are fundamental to good family development.

(c)   Problems that produce anger and frustration are lessened in a supportive milieu;

(d)   Constant reinforcement between infant and parents lay the ground-work for positive developmental patterns. The fact that there is no regression in most of the infants with cerebral palsy on in children with Down's syndrome suggests this possibility.

Therefore, this unit focuses on the early management programmes including infancy and preschool/preprimary years for children with developmental delays.

3.2   OBJECTIVES

On completion of the unit you will be able to:

•   demonstrate understanding of characteristics of infants and children

•   narrate the importance of early detection and intervention in the child's life

- explain the types and process of early intervention programmes, which are home based and center based.

- show awareness of conducting preschool and early childhood educational programmes.

- create awareness in the community regarding importance of early childhood special education.

3.3   DEFINITIONS

3.3.1   What is early intervention?

Early intervention is an early stimulation and enrichment programme for infants and young children with varying types and degrees of disability. It is primarily used for children with developmental disabilities offering services which will enhance the development of young children. In developing countries, where health services are lacking in urban slums and deprived rural populations and where poverty is widespread, such early intervention services form the basis of ensuring proper care and management of at-risk infants.

3.3.2   Its basis and relevance in our country

Where such services are lacking, there is every likelihood of at-risk infants developing mild to severe setbacks in their development. Early intervention not only reduces the impact of handicapping conditions when identified early, but strengthens the bond between mother and her child. This enables mothers to learn the importance of proper care and management and the role of child development herein.

Our experience shows how relevant these factors are for our country. Pregnant mothers who are poor and lack nutrition during those months, give birth to **low birth weight babies.** Such babies are most at-risk of being prone the childhood diseases. Therefore, in our country such programmes to which prevent infants and young children from developing handicaps and, ensure their normal development have great significance.

It is better to invest in early intervention and ensure that young mothers receive ante-natal care and child is monitored after birth than invest in special education later, as the results have long-term effectiveness for families.

3.4. TYPES OF EARLY INTERVENTION PROGRAMMES

3.4.1 Home-based

Initially early intervention programmes were home-based, mainly for the benefit of rural families as they were far from health facilities. The key persons in a home based programme are the home visitors. They need not be professionals. In fact, if they are SSC passed and receive intensive training in early intervention over a period of 10 weeks and have good supervision and guidance, then they do equally well. The home visitor is the active agent who takes the planned system of skills based sequentially, to the home and fulfills the role of a counselor and friend to both mother and child. The mother teaches the suggested activities based on the skills to her child and reports the progress to the home visitor at each visit. She in her turn, reports back to the supervisor regularly. In this way, the child's progress can be constantly monitored and the skills adjusted as necessary.

3.4.2 Center based

Center based early intervention is usually carried out in a children's hospital, a clinic or a center for children or a rehabilitation center for disabled children.

If such programmes are in hospitals they are part of OPD services and are conducted daily. They are usually attached to a Department of Neonatology/Pediatrics. In the latter case, they are offered daily on a full-time or part-time basis.

In center-based early intervention, the services of units like physiotherapy, occupational therapy speech therapy are also available and are provided as part of the programme. In addition, a Children's Hospital has other units like Departments of Neurology Cardiology, ENT, Ophthalmology, etc., where center-based children can be referred for tests and consultation. For multiply disabled infants, a center-based programme becomes imperative. However, the effect of early intervention can only be gauged over a long-term and in our experience, mothers who are overburdened, or have other young children or who have to travel over long distances, usually are unable to continue unless there is family support. Unfortunately, very few hospitals are willing to undertake such programmes as they involve additional expenses.

In center-based early intervention, the supervisor can be a pediatrician or a public health nurse, therapist or a special educator with knowledge in child development and experience in early intervention. Under her, she may have staff who are trained (equivalent to home visitors) and who give the planned system of skills sequentially to the mother individually. She works in the same way as a home visitor and guides the mother periodically in learning activities based on the skills.

3.4.3 Mixed (center and home based) intervention

There are some agencies which offer both home based and center based early intervention. It is offered to those families in urban areas who are far away from centers offering early intervention and where health services are lacking. The latter programme is offered to those families who live in districts and can come to centers on a fortnightly or monthly basis. The programme is also offered to those infants who are multiply disabled and who need paramedical and other services (for instance, babies with convulsive disorders).

3.5 IDENTIFICATION OF THE AT-RISK INFANTS

Criteria has to be laid down in the selection of at-risk infants. Usually, the babies referred are screened by pediatricians for:

VLBW	:	Very Low Birth Weight below 1.5 kg.
HIE	:	Moderate and Severe Birth Asphyxia
Jaundice	:	Severe in nature
Convulsions		
Meningitis		
Congenital Abnormalities		

Some infants have more than one factor.

In the selection process, a proforma for referral has to be drawn up in consultation with the neonatologists, to screen infants admitted to the neonatal nurseries.

On referral, the Supervisor of the early intervention programme meets the mothers of the referred infants to ascertain their willingness to participate in the programme. The mothers' cooperation is crucial to the success of any early intervention programme, for she in turn influences the family's involvement.

3.5.1 Direct strategy of home based and center based intervention

(a) The home visitor is introduced to the parents following the initial contact by the supervisor while the mother is still at the hospital. During the initial contact, the parents are given a brief account of the service.

(b) The home visitor on her introductory visit, gives further information regarding the service and gathers basic information about the family in the initial interview. She also determines whether the parents wish to accept the programme.

This is then followed by:

1.   weekly home visits by the home visitor allotted for a particular area or locality.

2.   giving weekly training goals set individually for each parent and child.

3.   demonstrating the target skills to the principal career of the child, mostly the mother.

4.   training by the `Principal' carer during the course of the week.

5.   assessing the skill by the home visitor the following week.

6.   modification of the skill if need be, in case of any difficulty, or else teaching new skills sequentially.

7.   recording each of the home-visits made by the home visitors during the week.

8.   weekly supervision and reporting of the cases by the home visitors to their respective supervisors.

9.   whenever babies do not respond to the training programme, they are brought to the center for examination. If on examination, the baby shows physical or neurological problems, then proper referral or treatment is undertaken, but these infants also continue in the programme.

Additional inputs

An additional implementation strategy is developed in the first few months of the Home Training Programme. In consists of the following steps:

1.   Home visitors demonstrate to mothers the care of the newborn, particularly, the low birth weight infant. Special insistence is made on breast feeding. Mothers are also taught the preparation of low-cost weaning foods.

2.   For all medical problems, mothers are advised by the home visitors to report to the well baby clinic for examination and advice by the attending pediatricians.

3.   Mothers are consistently advised to immunize their infants at specified intervals at the Hospital or nearest convenient center.

4.   If drugs are not available at the hospital, deserving mothers are given drugs free of cost.

5.   Home visitors help mothers handle common childhood illnesses and teach the use of oral rehydration solution.

In center based intervention, the same direct strategy is followed,

1.   Weekly visits is done by mother to the center (a hospital/clinic) with the infant, if the case is in a nearby locality.

2.   At the center, the supervisor with two home visitors attend the center on a weekly basis and the same procedure is followed as is done in home based programme.

3.   The babies who do not respond to the training programme at the center, are shown to specialists at the hospital for physical or neurological problems. This is followed by proper referral or treatment, but the infants continue in the programme.

4.   Additional inputs by way of physiotherapy and speech stimulation are given at the center to the infants. Other inputs like availability of drugs, vitamins and handling of common childhood illnesses, maintaining immunization schedule are all attended to.

3.5.2   Maintenance of case files

They contain:

(a)   Proforma – an intake form which gives details of ante-natal and neo-natal history, nature of delivery, baby's reflexes at birth, and a rating of other vital details.

(b)   Home visit report for each home visit made weekly – verbal and written.

(c)   Skills' check-list, noting the skills selected for training and those learnt:

(d)   Maintaining weight charts, to record the weight of the babies on a monthly basis. This enables the supervisors to assess those babies who are below the age percentile.

(e)   Maintaining record of measurement of head and arm circumference of each baby in the case file.

(f)   Maintaining a Developmental Assessment Register of each child tested at sixth month and those re-tested. The test is based on the Gassell Developmental Scale and the testing report enables the supervisors to monitor the switch-over from weekly to bi-weekly and even monthly home visits for those babies who are thriving well and developing normally. It also enables them to monitor those babies with developmentally delays.

(g)   Maintaining a Register of toys lent to each home visitor on a bi-weekly basis for the infants they visit in the ensuing week. The selection of toys is based on the age of the babies and the skill to be taught.

(h)   A register of weekly medicines given free to the infants and mothers is also kept.

As a direct result of monitoring, we are able

(a)   to detect disabilities as early as three months in some of the babies;

(b)   and to supervise the regularity of the home training programme.

3.5.3   Check-list and Developmental Skills

An early intervention programme is monitored and progress marked as per a check-list of skills in major areas of development.

This check-list serves as a basis for training the principal carer i.e. the mother in developmental skills.

Initially, the coordinator responsible for the early intervention programme has to select and determine which home training programme will be appropriate for early intervention.   Early intervention kits consist of the check-list of various skills, covering 1 month – 6 years of age, a manual explaining how to use the check-list and monitor the progress and a set of activity cards, based on each skill.   Each activity card clearly states the age-group, the target skill and suggests 3-4 activities and toys needed to teach the particular skill.

Usually, the developmental skills are marked into 5 areas:

o   Motor area – gross and fine.

o   Socialization – also covers play skills

o   Language – also covers communication skills.

o   Cognitive – also covers pre-readiness skills.

o   Self-help.

You have noted the various strategies for training in these areas in Block 3 Unit 1 to 3 of SESM 02.

You will find that the skills are sequentially drawn and are inter-linked across the five areas of development.   Each skill prepares the ground work for the next skill and enables the child also to learn a skill in another area of development.

After assessment by the home visitor, she determines which skills to select. She demonstrates not more than 2 skills initially to the mother with the baby and determines on the next visit if the skills taught have been learnt. With each visit, she continues the assessment and demonstration of new skills. Gradually, she introduces 3 but not more than 4 skills drawn from 2-3 areas of development to the mother and discusses with her if she faces difficulties in training and if needs be, modifying the skill. Most of the skills are to be taught by mothers during the time when the infant is awake and in the course of the daily routine in caring for her child.

Where neurological problems and speech delays arise, physiotherapy/speech exercises have to be demonstrated at a center and the home visitor then follows up and seeks further consultations regularly.

3.6 COMMUNITY AWARENESS PROGRAMME

This is an important component of an early intervention programme.

Identification of Groups: The localities in which infants live as well as hospitals/clinics where early intervention is done, form the target population for Community Awareness.

Group process of giving information : Hospitals have ante-natal clinics and delivery wards (post-natal wards). Here, you will find pregnant women and mothers in the postnatal wards who need education. The programme for the pregnant women is about the importance of ante-natal care and good nutrition, T.T. injections, problems which arise during pregnancy, and spacing, In the latter programme, mothers can be educated about child care in the first few months of life, importance of breast feeding and immunization, good nutrition, monitoring baby's weight and important stages of development. Majority of poor and young mothers who come to free hospitals are at-risk mothers who are below 18 years and are anemic. They in turn give birth to high risk new borns.

The other major target groups are localities in slum areas where mother groups/self-help groups of women exist. These groups are where community awareness becomes significant. It is found from experience to leave the topic to be covered open as per the need of the group. Mostly, mothers are concerned about nutrition, childhood diseases, immunization, and early detection of handicaps. Many a time these mothers bring in a handicapped child to meetings for counseling and referral.

Mode of communicating the topics

Because women from slum areas and in children's hospitals are illiterate or semi-literate, it become essential to use flash cards/illustrated charts and if possible video on the topics covered. Such presentation stimulates questioning and discussion.

The questions concern pregnancies, harmful customs and practices regarding childhood illness and diseases, habits regarding nutrition, delayed development, motor delay and infections of the eye and ear.

3.6.1 Experiences in Delivering early intervention services

These experiences are based on an existing early intervention programme which has been conducted for the past thirteen years. Most of these experiences are common to other existing programmes in large cities.

Localities

Some of the selected infants at risk have families living in inaccessible or distant localities, where no health intervention measures are available and the babies chances of survival are tenuous. Illiterate mothers are sometimes unable to give proper addresses with house numbers or land marks. Hence, locating of houses becomes difficult and time-consuming.

Poverty and deprivation

Families live in very difficult conditions. A large majority of the families live in ramshackle old homes or in small one-room and kitchen tenements. Most of the living quarters are dark and poorly ventilated.

Because of ignorance, negligence and poverty, many families cannot provide adequate diet to mothers and children. Very few of the children have toys or play things.

Income source

Majority of the fathers are under-employed or are daily wage-earners. Families where mothers are deserted by their husbands, have tremendous odds to face in raising the family. These babies are the ones who do not thrive well.

In many homes, siblings are found at home, receiving no education. In a few families, the older siblings are daily wage-earners.

Follow-up and record keeping

A large number of our mothers were below 21 years and some appear as young as 14-15 because mainly no birth record is kept by the family.

While some mothers are regular in follow-up and attendance at **Well Baby Clinics** when called; others, despite an offer of bus fare, either avoid coming or refuse to go to the nearby primary health centers and Government dispensaries in their localities.

Family size

With families having 5-8 children, the mother's plight in raising the family is indeed difficult.

Doubting the supervisors to be staff of family planning service, the mothers while in the hospitals, do not give the correct number of children they have.

Traditional beliefs

Some of the age old practices which cause harm to babies or mothers require a lot of persistent correction from Home visitors,

- like rubbing chilli powder on the caesarian incision of mothers;

- branding the babies' stomach, chest and forehead for lessening pain and reducing convulsions.

- very restricted and limited diet of mothers, who have delivered their babies, devoid of greens, vegetables, pulses, fruits and milk.

Elders in the family resist our suggestion of undertaking measures to prevent diarrhoea and maintaining proper nutrition and hygiene. Thus a large majority of our mothers are weak or anemic.

There is resistance on the part of mothers to start with simple semi-solid food at the $4^{th}/5^{th}$ month of their babies.

3.6.2   Other positive experiences

Despite these problems, the Home visitors report encouraging interaction with the families they work with.

Stressful living conditions and poverty apart, it is found that mothers have the tenacity and are enthusiastic about the programme.

With the introduction of weighing scales and measuring tapes being taken to homes, mothers feel, reassured of babies weight gain. While some mothers take for granted the baby's development without early stimulation measures, other feel that stimulation, vitamins, immunization and weighing the infants are all measures which help improve their babies.

Though families are becoming unitary, joint families are still a reality and play a supportive role.

3.6.3 Home visitors personal involvement

Because of the home programme home visitors are able to detect visual, hearing or motor, lag as early as the 3rd month. This calls, for early developmental testing before 6 months, and early referrals for visual, hearing or neurological assessment.

Family motivation

Keen interest is evinced in the programme by the socio-economically backward families. Refusal to participate is seen in (i) professional parents and (ii) parents who felt they had adequate medical help in their own families.

3.7 PROBLEMS ENCOUNTERED

Some inherent problems are part of early intervention programmes.

Different language spoken by the home visitors, delay in case recruitment and regularity in referral, non-compliance of families to make required visits for physio-speech therapy/developmental testing, change of address with no proper forwarding address, frequent change of homes, inaccessibility in reaching families and inadequate addresses are some of the problems in home-based programme.

3.8 OUTCOME OF EARLY INTERVENTION PROGRAMME

During the designing of the programme, it will become clear that health aspects cannot be separated from the development of the child.

Home visitors should therefore be taught (1) basic principles of health; (2) identification of common illnesses; (3) oral rehydration for diarrheal illness; (4) the importance of breast feeding and appropriate weaning foods; (5) immunization and (6) when to refer a child suffering from diarrheal or respiratory illness.

This is, in addition, to the emphasis of home training in developmental skills and the early detection of childhood disabilities, which become the main aim of such a programme.

In determining the outcome, it becomes apparent that particularly in families from low socio-economic groups, health factors become paramount to survival. Developmental outcomes can only be measured in infants once they have survived the neonatal period and infancy.

3.9 MOVING FROM EARLY INTERVENTION TO EARLY CHILDHOOD EDUCATION PROGRAMME

3.9.1 How far can early intervention be offered?

Early intervention is to be offered till the child is at least three years old. By then, he is ready for integration in a regular pre-school. Majority of infants in early intervention achieve normal development if the intervention has been implemented soon after birth and where the family's involvement has been ensured.

However, there will be some infants who have multiple handicaps or have severe retardation. These infants need to be admitted in Special Schools with a pre-school programme if the early intervention programme is offered only up to the third year. Otherwise, the early intervention services may continue for such children till they are six years of age. In case of infants with neurological deficits leading to multiple handicaps and severe retardation, most of them benefit out of early intervention to a greater extent as the impact of the handicap is reduced. On the other hand, parents learn to cope with their infants and acquire skills and measures, if they are given proper support and guidance from early years.

Early childhood education programmes and preschool programmes such as nursery and kindergarten or alternatively anganwadis are designed to prepare a child to have sufficient independent functioning required for admission in a school. For example, a child with mental retardation in early intervention programme based upon the severity, age and current level of functioning of the child will have programmes in self-help, language skills, etc. On the other hand, a child with visual impairment is taught hearing aid and lip reading. All such programmes are designed to prepare the child with disability to join the mainstream of education.

Children are also required to master pre-academic skills, which are necessary for obtaining success in school related tasks such as reading, writing, computation and problem solving. School readiness, therefore, has to take into consideration activities of reasoning, pre-math skills such as comparing, labeling, and measuring quantity and equivalence-non-equivalence of objects. Children have to be oriented to alphabets and numbers. For example, in numbers children should not only be able to discriminate one or two, but four as more than two and so on. Acquisition, maintenance and generalization are important steps in learning. Parents are requested to design training activities which are as close to the living environment of the child as possible. Few of the principles to be followed are: (a) teaching activity must be age appropriate; (b) it should incorporate activities that are functionally relevant to the child with disability; (c) the training activity must be relevant to the community environment surrounding the child; (d) we must take into account pre-requisite skills for learning new activity or task; (e) we should adopt direct instructional approach in which each skills is taught directly in the conditions

in which it is essentially expected to be performed and (f) in order to ensure maintenance of learning, the practice should be distributed systematically so that the learner having acquired the skill continues to perform the skill.

3.9.2   The Special school

The Special Schools which take handicapped children of 2 ½ - 3 years of age have also intervention services and offer readiness skills.

In fact, where such pre-school (readiness) programmes are offered by special schools, these children are better equipped than others who join later. The age-range covered is usually 3-6 years and maximally up to 8 years.

Integrating children in regular preschools or providing school readiness at home or in anganwadis are crucial for their overall development. Programmes such as portage guide to early education and locally developed ones are found helpful in training such children.

Therefore, early intervention becomes not only a preventive programme for infants born-at-risk, but it becomes a crucial and first step in the prevention and rehabilitation of infants who are born handicapped or are at-risk of becoming handicapped as they grow. By community awareness, one reaches out to young, pregnant mothers from socio-economically deprived families to ensure that they give birth to normal babies. You will therefore see how early intervention – early stimulation programmes are relevant to our country's needs.

3.10   UNIT SUMMARY : THINGS TO REMEMBER

- Outcome studies of early intervention programmes bear out that an infant's competence is hastened by a period of enrichment.

- Parents are potentially the best teachers of their child and in so doing, increase their interest and involvement in their child.

- Early intervention implies early stimulation and enrichment programme for infants and young children with varying types and degrees of disability.

- It is better to invest in early intervention and ensure that pregnant mothers receive ante-natal care than invest in Special Education later.

- Early intervention programmes are home-based or center-based or both.

- The staff in early intervention have to be trained intensively in acquiring a planned system of skills.

- The staff for home visitors and supervisors have to be carefully selected, keeping in mind their ability to work with families at home and in hospital centers.

- Several records need to be maintained in an early intervention programme.

- The early intervention kit consists of a check-list, a manual and activity cards. They cover skills and activities from birth to 6 years of age.

- A community awareness programme is an essential component of an early intervention programme.

- Young and pregnant mothers, and women in self-help groups are educated in appropriate ways.

- Early childhood education programmes are a continuity of early intervention and can be offered at integrated level by regular schools.

- Those with multiple disabilities or severe retardation can be part of special schools offering readiness programmes to such children of pre-school age.

3.11   CHECK YOUR PROGRESS

1	Early intervention is a programme for all age groups	True/False
2	Neonatologists/pediatricians are the main professionals for referring high-risk infants for early intervention	True/False
3	The home visitor is the only person who gives early intervention	True/False
4	A baby only thrives on bottle feeding	True/False
5	A baby's weight needs to be monitored to ensure his growth and development	True/False
6	Early intervention need not have para-medical services	True/False
7	Services given in early intervention is difficult to monitor	True/False
8	Without a check-list and a schedule of developmental skills, early intervention is difficult to monitor	True/False
9	Community awareness is an essential part of early intervention	True/False
10	Continuity in early intervention by way of pre-school programmes (pre-readiness) ensures mainstreaming –	True/False

3.12   ASSIGNMENT/ACTIVITY

Draw out the steps you will undertake to organize an early intervention programme, both home-based and center-based.

3.13. POINTS FOR DISCUSSION / CLARIFICATION

After going through the unit, you may like to have further discussion on some points and clarifications on others. Note down those points below:

3.13.1 Points for Discussion

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3.13.2 Points for Clarification

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UNIT 4: STEPS IN DEVELOPING CURRICULUM, CHALLENGES OF DEVELOPING CURRICULUM FOR INCLUSION

STRUCTURE

4.a.1 INTRODUCTION

Curriculum includes all the necessary activities that are required to prepare the students to lead a successful life in the society. It is a structured set of learning outcomes (objectives) resulting from instruction (Johnson, 1967) This set of objectives is sequenced and organized to facilitate learning. Curriculum tells us what content to be taught, how the content is to be taught and how and when to measure the outcomes.

The curriculum for children with mental retardation differs from that of the non-retarded children. The curriculum for non-retarded children includes subjects such as English, language, mathematics, science and social studies whereas the curriculum for children with mental retardation includes core areas such as personal, social, functional academics, occupational, and recreational skills. The curriculum coverage in the above said areas is essential as children with mental retardation show deficits in these areas. If we aim at meeting the goals of special education ie., preparing the individuals with mental retardation for independent living, education covering the content in the above said areas is warranted. It is also necessary to remember to add appropriate activities to develop motor and language skills. In addition, in case of non-retarded children the total curriculum is expected to be mastered by the entire group whereas the mastery of the curriculum by the children with mental retardation depends on each child's level of functioning and the associated condition he/she has. Hence, the curriculum for children with mental retardation is functional in nature. Further, the curricular contents are developed depending on the need of each of the skill areas for the child with reference to his/her age, condition and the community to which he/she belongs.

Personal skills include eating, dinking, toileting, bathing, dressing and grooming skills. Social skills include receptive, and expressive language, group behaviour (at home, school, neighbourhood, community) and manners. Functional academics include reading writing, number, time, money, weight, volume and length and distance. Occupational skills include travel, shopping and domestic activities like cooking. Recreational skills include playing indoor and outdoor games and play behaviour. Motor skills including gross and fine motor activities are embedded in all the above activities.

Like in regular schools, the children are grouped into different groups based on age and ability (See SESM-1, Block-2, Unit-3 for further information on grouping of students with mental retardation for classroom teaching). The selection of

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curriculum content in each area, the material and strategies to train depend on the age, ability, the family environment and resources. For example, curriculum for students of primary level consists more content area (activities) in personal, social and academic areas than other areas as the primary emphasis will be on developing these skills.

4.a.2   OBJECTIVES

After going through the unit, you will be able to

- Describe the curricular contents for primary, secondary and pre-vocational level of students with disabilities.

- Explain the strategies for teaching personal skills, social skills, domestic skills, communication skills, and occupational skills for different level of students with disabilities.

- Describe age appropriate activities for developing different skills in the students with disabilities.

4.a.3   CURRICULUM FOR PRIMARY LEVEL

Children between the age group of 6 to 9 years are considered as belonging to the primary level. Due to the intellectual impairment, children with mental retardation show delays in all developmental areas, which reflects in learning academics and deficits in adaptive behaviour. Hence curricular emphasis should be learning skills and behaviours that are necessary to function independently as far as possible and in a socially acceptable manner.

Curriculum for the primary group is an extension of that of the pre-primary class. Therefore emphasis will continue to be on the areas like self-help, language, communication, social, functional academics, domestic/occupational and recreational skills. The extent of coverage of activities to be stressed at primary level again depends on the exposure and achievement at the pre-school level by the children and also the activities have to be age appropriate. For example, an 8 year old non-retarded child is not expected to cook a meal but can help mother in laying table, serving food or arranging utensils in the shelf. In case of academic skills, we need to follow a sequence. For example, after a student learns to do addition sums, subtraction sums are taught.

4. a.3.1   Personal skills

Personal skills include eating, drinking, toileting, bathing, dressing and grooming. However, to perform these activities, other skills such as motor (gross motor and

fine motor) and language and communication skills are also required. Take the example - take water from the water filter and drink. The girl has to walk to the kitchen, identify glass and take the glass, open the tap (finger grasp) fill the water, close the tap and drink. Another example is when the family goes to their friend's house and the girl feels thirsty, she has to tell her mother (communication) that she needs water. Therefore, we need to remember that skill areas are not isolated, but they all overlap.

(i)   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.

- Use lunch time and break time to teach.

- Let children identify their lunch boxes/bags. After completing the meals, let them take care of their belongings.

- Ask parents to give a plate and glass for each student which can be kept in school.

- Prepare a duty chart indicating the name of the student and the activity to be performed. For example, Rajan – keeps plates; Sita – keeps glasses; Suman – pours water; Sajan – collects all plates and keeps in the wash basin. Draw/paste pictures of activities along with sentences. It helps in reading. Initially you may also stick photographs of children and write their names under the photograph. It facilitates in reading their names.

- Encourage children to share the food with their friends.

Specific skill related points

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 fruit juice, or buttermilk (in addition to water) while teaching drinking. Child's choice of drink motivates him to drink.

- Give a small jug/bottle with less water while teaching pouring water into glass for drinking.

Eating:

- Begin teaching independent eating with non-sticky food items like poori/dosa.

- See that the children eat chapatti with curry, dosa/idli with sambar/chatni; rice and dall/curry and other items to be eaten with side dish. Often it is noticed that children with mental retardation have difficulty in taking proper proportion of the food along with the side dish. They tend to eat curry and chapatti or rice separately.

- Before teaching the student to mix and eat rice, mix rice and curry/dall and make small balls for student to pick up with fingers and eat. If he needs physically guide by placing your hand on top of his right hand and help in picking. Be behind the child so that your right hand and his right hand are in same direction.

- Tell students what they are eating during training.

- See that you do not serve all the food in the plate at a time. Serve a little. Name the food items. After he finishes the food first served, ask the student whether he would like to be served more food

- Tell the parents to give opportunity to their son/daughter to ask for food and also which item he/she wants. Generally parents serve the rice/chapatti with all side dishes and keep in front of the child, not giving him a choice. Before serving, if we ask the child to name the food items, the child will be able to associate the name to the food item in the long run. It facilitates learning language.

- Eating activity also involves washing and wiping hands, washing plate and glass, tiffin box and wiping table. These activities should also be taught to students as part of training in eating skills.

(ii) Toileting skills

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

Points to remember:

- 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.

(III) 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.

Brushing:

This activity can be taught in schools after lunch to those children who have difficulty in brushing teeth.

Points to remember:

- Thicken the brush handle with cloth/plaster/fix a wood handle for holding in case there is a need for good gripping.

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- Use mirror as far as possible (standing in front of the mirror) while training children in brushing.

- 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.

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.

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(v)   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.

4.a.3.2   Social skills:

One of the characteristics of children with mental retardation is inappropriate behaviours which make them look different in groups. In addition, due to lack of proper socializing skills with the age appropriate groups, they tend to play with younger children. Therefore, they need to be taught the manners group behaviour in various situations and environments.

Points to remember:

- Use situations in school, in neighbourhood and in community to teach children social skills. For example, we can teach saying thank you during the activities involving distribution of materials to children in the classroom, playground, lunch room.

- Standing in a queue, waiting for their turn, sharing, playing cooperatively, taking leadership role are some activities which happen routinely in school. However, teachers should make conscious effort to make use of all these situations to impart the curriculum content to students who need training.

- When bullied, beaten or in distress, getting help/managing the situation is also a social competency to be taught.

- Parents/family members need to be informed to practise the same at home. It helps in developing appropriate, acceptable social behaviours among children with mental retardation.

- Travelling by bus involves getting into the bus, finding a seat and sitting, holding the rod and standing if there is no seat for sitting, paying ticket money or showing bus pass. Similarly, shopping at this stage involve dressing up, taking money, going to the shop, identifying/asking items (which costs smaller amounts) for buying, and carrying the items back home. Training in all these activities is necessary for performing the tasks by themselves. (See SESM-03, Block-1, Unit-4B)

- Taking care of personal belongings, not to get cheated by others and understanding rights are essential social skills for independent living.

4.a.3.3   Language and Communication skills

Language and communication is a medium for socialization. As discussed earlier, due to intellectual impairment you notice developmental delays in all the areas of development among children with mental retardation. One of the developmental areas is language and communication. See SESM-2 Block-3 Unit-3.

Point to remember:

- Select the words which are commonly used and seen in child's environment in the beginning for teaching. For example, in vegetables, select words, potato, onion, green chilli rather than cauliflower, raddish which are seasonal.

- See that you follow the principle "concrete to abstract" while planning your lesson plan for teaching (see SESM-3, Block-2, Unit-1).

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○ Select action songs in regional languages that explain a concept (For example, "this is a bus, bus has four wheels....", "elephant has a long trunk, four legs......") Let all children participate actively while doing actions. Use puppets, masks, or dramatize the character for better understanding of concepts. These type of activities sustain the interest of children and motivate them to continue the activities.

○ Story telling using puppets/role play are all important for language development. It helps in developing listening skills, narrating in a logical sequence, answering questions, and understanding cause and effect relationship.

○ We use a lot of gestures along with words. For example, you tell a student to "close the door" (a verbal command). If she understands the instruction and does the activity, you don't have to be using gestures. Otherwise, you point to the door, and show with hands to give meaning to the sentence "close the door". If you use gestures, slowly fade them (See SESM-3, Block-2, Unit-2).

○ Children have to develop both receptive and expressive language skills. Children with mental retardation show more deficits in expressive language than receptive language. Therefore, we need to develop alternative communication skills. There is a need to encourage children to use non-verbal modes, along with verbal expression of words they have in their repertoir for communication, as proper communication skills are essential for building good interpersonal relationships, group behaviour, group acceptance and for learning performing various activities and above all social competencies.

4.a.3.4   Occupational skills

To prepare an individual with mental retardation for independent living, training in overall development of skills is important. Occupational skills include activities such as cooking, shopping and house keeping. However, the curriculum content at primary level will be minimum when compared to secondary and prevocational level.

Points to remember:

Shopping and travel skills are interrelated, ie., if one has to go for shopping, he/she has to go using the right mode of travel to the respective place. Therefore, a teacher can select related curriculum content in both the areas for teaching. For example, if students are taught to read and write numerals from 1-5. The teacher can teach identifying and naming rupee notes/coins and using money to buy things which

costs within Rs.5. Reading price tags, selecting item and paying bills, all with your support.

Involve in domestic activities such as washing plate, glass and tififn box, wiping the table, sweeping the floor, dusting separating vegetables and placing them into boxes/plastic bags.

Arranging for breakfast, lunch, dinner by placing plates, glasses and serving water, can form part of the routine.

4.a.4 CURRICULUM FOR SECONDARY LEVEL

Children between the ages of 10 to 13 or 14 years are grouped under secondary level. Once the primary group of children achieve 80% of the curriculum content in the primary level, they can be promoted to secondary level (see flow chart – SESM-1, Block-2, Unit-3). In case of children with low ability the teachers have to continue teaching in those tasks which the students have not achieved. They are grouped as Primary II (See SESM-1, Block-2, Unit-3). Though the same domains/.core areas as in the primary level are included in curriculum at secondary level, the content and complexity of the activities is increased keeping in mind the learning characteristics of children at this level. This is also noticed in general education. For example, in every class, students have to study the subjects English, regional language, Hindi, mathematics, science and social studies/environmental science. The complexity of content in each subject is increased in every class keeping in mind the learning characteristics of children. Similarly, for children with mental retardation also, the curriculum content in each domain/core area is the extension of curriculum at primary level.

4.a.4.1 Personal skills

With systematic planning and teaching, the high ability group of children with mental retardation learn to eat and drink, dress, brush and bathe on their own by the time they reach secondary level. However, some of them may require minimum assistance in bathing and dressing. At this level the following curriculum content needs to be covered as an extension of primary curriculum.

The curriculum content should cover activities such as eating of different types of breakfast items and sweets appropriately (eg. Eating gulab jamon/rasagulla/payasam with spoon, taking a small piece of chapatti with right hand and taking a small quantity of curry/dal and eating), showing appropriate eating/table manners when children participate in social functions and cafeteria, carrying water, filing water in bottles, folding manageable clothes, bed covers/sheets, cutting pictures, pasting, folding papers and inserting them into

covers and the other routine activities. Never underestimate student's ability. Expose him to various activities and assist in learning.

Points to remember:

- 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.

- Take them to eating places as a part of school activity to expose them to various types of eating environments.

- Allow children to decide what they want to eat and order the items.

- Give them an experience of folding letters and inserting them into envelops and pasting. Every organization has a lot of correspondence to do. The students can be given them activity after initial training.

- Folding of napkins, towels, aprons or table cloth can be taught at school as these materials are used during organizing various programmes at school.

- Schools celebrate national festivals, birthday parties, sports day, annual day and such functions through out the year. Students at this level can be involved in decoration, seating arrangement, food/snacks arrangements.

- Inform parents/family members to involve their children in all these activities at home also so that transfer of training and generalization is achieved.

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4.a.4.2   Social skills

To be accepted as a member of the group and part of the community, one needs to have smooth interpersonal relationships for which adequate language and communications skills are required. Often children with mental retardation fail to interact with groups meaningfully in an acceptable manner. It is observed that most of the children with mental retardation have limited vocabulary and have difficulty in speaking in sentences, understanding and following instructions and narrating incidents in a sequence. Various activities should be planned to develop these skills at secondary level.

Acceptable behaviour towards persons of opposite sex needs to be taught subtly and constantly during social situation at this state. Do's and dont's should be clearly specified to avoid embarrassment. This training should be continued into prevocational stage also.

Suggested activities:

- Take students on trips to various places (shops, cafeteria, railway station, post office, place of worship, place of entertainment) during the year. Let students narrate their experiences after you return from the trip. Write it on the board in simple words at their level of undersanding and let children copy in their notebooks. This can become a reading journal for students. As they are real life experiences, children enjoy narrating the events.

- On rotation teachers can assign to students, the job of delivering messages to other staff members in school, taking telephone messages, talking of current news, conducting group games.

- Plan games which require listening skills.

- Teach students short plays wherein students have to speak 2-3 sentences relevantly.

4.a.4.3   Occupational skills

At this level the children start helping parents/family members in many of the household activities. Performing these activities require application of functional reading, writing and arithmetic skills. For example, when the student is asked to measure two cups of rice, he should have learned counting as a part of number skills which he applies while performing the activity. In case of low ability children (Primary II – 7-14 years, Prevocational-II – 15-18 years) measuring of two cups of rice can be an activity for teaching counting. Identifying and reading labels on edible items/writing a shopping list are other examples. Similarly activities such as washing clothes, moping floor, wiping, storing, or packing requires knowledge of functional academics and fine motor skills.

Suggested activities:

- Sweeping, mopping, dusting, and washing utensils can be regular activities in school. After completion of art and craft/cooking activities children need to be taught to clean up.

- Include classes in home science at least once a week, which involves pealing, cutting, cleaning of pulses and rice, arranging for lunch, cleaning up after lunch, washing and stacking utensils.

- On rotation, the students can be made responsible for maintaining cleanliness of space outside classrooms and playground.

- A small kitchen garden can be maintained by students. This can be a part of teaching environmental science, as well as an occupational activity.

4.a.5 CURRICULUM FOR PRE-VOCATIONAL LEVEL

Students with mental retardation within the age range of 15 to 18 years belong to prevocational group. At prevocational level children are of two different groups - prevocational-I (high ability group) and prevocational-II (low ability group) as discussed earlier. However, the major focus of curriculum at this level is to prepare students to acquire skills which prepare them to live independently as far as possible. Independence implies personal, social and occupational independence. Hence, much stress is given on a more functional curriculum. As it is a preparatory stage for the future of the young people with mental retardation, most of the training emphasis is application oriented and should include training in natural environments. The curriculum is naturally the extension of secondary level curriculum.

4.a.5.1   Personal skills

The extension of secondary level curriculum under each domain is discussed below.

Once the child learns eating and drinking by self, the skills can be further extended to make them a part of independent living skills.

Generally, when the child grows older, we do not provide glass of water to him/her, rather we expect him/her to get water from the filter, refrigerator or pot and drink on his own. Children with mental retardation also are expected to learn all these skills. In the school, teacher can train the students to:

- Pour water in the glass form the water bottle during lunch time.
- Get water in a glass form the water-cooler.
- Fill the bottles of the teachers from the water cooler.
- Help the younger children in getting or pouring water in the glass.
- Clean up if spilt without reminder.
- Serving water to everyone during meal times.
- Identifying/asking for drinking water during outing.

In order to practice and maintain the learnt skills, these activities should be carried out at home. Family members can be informed to carry out the activities at home.

By regular practice at home and in school these activities can be made as part of routine activities of the students during pre-vocational period.

Eating

In addition to self-feeding, eating behaviour includes (a) appropriate manners while eating, (b) serving food to others; (c) arranging table (d) cleaning the table, (e) storing the left over food, (f) cleaning the utensils, (g) giving order for food at restaurant, etc.

Parents can be informed to train the students at home in serving food for self as well as for others. While training, the sequence in serving can be:

- Roti, puri, bread, idly, which do not spill.

- Pickle or chutney, which is not hot (temperature).

- Fried dishes, rice, curry, dal.

While serving the food, the amount to be served need to be indicated to the students.

As part of regular activity, the parents can instruct the child to:

- Arrange the dinner table (again non spilling, not hot items first).

- Clean the table after meals.

- Store the left over food in bowls and keep them in storing place/fridge.

During the initial stage of training, unbreakable bowls may be used to avoid possibility of damage of the utensil.

Students should also be taught to clean the utensils. Begin with, simple dishes like plates and small bowls (unbreakable) can be used.

Points to remember while teaching washing utensils:

Dressing:

The students with mental retardation need to learn how to maintain their own clothes. This includes:

- Washing clothes.

- Drying clothes.

- Folding clothes.

- Ironing clothes.

- Keeping the clothes in the cupboard.

- Stitching broken buttons/mending it torn.

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- Giving clothes for stitching.

In the school, the teacher can train the prevocational group students by instructing them to:

- Keep the dress neat (by using napkins for wiping).
- Use of apron while engaged in cooking activities.
- Stitch buttons in the dress/mending.
- Iron napkins, towels, aprons, and gradually their dress.

Students during prevocational period should also be taught to select their clothes, for themselves. Hence, the family members can be informed to give them opportunity to:

- Select their clothes for different occasions.
- Dress appropriately to attend different parties and functions.
- Choose dress materials for themselves in the shop.
- Select appropriate seasonal dresses.
- Maintain the seasonal dresses properly to use them when needed.

In class, initiative conversation on above topics and elicit responses from the students.

4.a.5.2   Social skills

Social behaviour of the students plays a vital role in their vocational habilitation. Limitations in social skills of the disabled students form the major barrier in the process of integration. During the pre-vocational stage, students are expected to behave appropriately in different settings, use public places appropriately, be able to seek permission for using belongings of others and should be able to participate in social functions independently. All these behaviours require student's competency in language and communication.

In school, focus on:

- Wishing everyday.
- Involving in group games.
- Story telling.
- Narrating experiences.
- Discussing important news (TV/newspaper/neighbourhood).

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- Receiving and passing on telephonic message to appropriate person.
- Getting involved in various functions celebrated in the school.

Home activities can include:

- Greeting the guests.
- Interacting with family members and guests.
- Attending social functions.
- Sharing experiences with siblings.
- Receiving telephone calls and taking message.
- Participating actively in various festivals celebrated by family members.
- Going for outing with family.

In addition to developing appropriate social behaviours, we have to reduce the socially inappropriate behaviour through behaviour management techniques (SESM-2, Block-2, Unit-2 for more details on management of maladaptive behaviours)

MENSTRUAL HYGIENE

An important skill to be taught to the girls with mental retardation during secondary/prevocational level is menstrual hygiene. To make the girl independent (as far as possible) in personal skills, lessen the burden on the mother and avoid embarrassing situation, right type of training can be provided to the young adolescents at home. While providing training on menstrual hygiene, take care of 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. InN 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.

4.a.5.3   Occupational

As the name – "prevocational" indicates, this stage is most important for "preparing the students for suitable vocations". Through the joint efforts of school and home, appropriate work habits (punctuality, regularity, sincerity, persistence), proper work behaviour, hand functioning, eye hand coordination, and required community living skills (travelling, shopping, banking skills) can be developed in the students.

Eye hand coordination and hand functioning which are important prerequisite skills for any vocation can be improved by:

- cutting, pasting.

- Using different hand tools (hand saw, files, pliers, etc.)

- Screwing, unscrewing.

- Stitching, knitting.

- Garland making.

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In the school, engage the students in various simulated activities to assess the interests of the student.

- wood polishing, cutting, nailing, screwing.
- Assembling work.
- Labeling different items/tools (in the workshop).
- Binding and printing work.
- Hand stitching, machine stitching.
- Packaging work.
- Gardening work (cleaning gardens, watering plants, plantation, etc.)
- Operation of different machines.
- Management of school canteen.

Teach various community living skills by organizing following activities for students –

- preparation of list of items to be purchased.
- Making the budget for the items to be purchased.
- Going to the shop.
- Gong to the bank.
- Tying the leafy-vegetables into bundles for selling among the school staff.
- Completing group assignment on time.

Family members can be instructed to discipline the students and develop proper work behaivour by entrusting responsibilities such as:

- getting milk packets from the milk booth.
- Packing lunch boxes for everyone.
- Getting vegetable once a week.
- Giving clothes in laundry and keeping an account of it.
- Getting postal items form post office and dropping letters.
- Stitching the broken buttons.
- Decorating the house during festivals.
- Giving complaints when telephone is out of order.

- Booking for gas when it gets over.
- Paying electric bills, telephone bills etc.

Parents can be instructed to follow a daily activity schedule for their child (with disability) at home. Depending on the improvement in various skills, the activities can be increased. This schedule will help to discipline the students behaviour and improve work habits in them. While selecting the activities for the students, the socio-cultural factors, socio-economic status, sex and abilities of the students need to be considered.

Domestic skills:

Under domestic skills the prevocational group of students can be taught housekeeping skills by involving them in the domestic activities like:

- Dusting, sweeping, mopping.
- Making bed and folding bed.
- Cooking.
    - keeping the grocery items in proper bottles/tins.
    - Sorting and storing the vegetables.
    - Cleaning and washing rice for cooking.
    - Washing the cut vegetable before cooking.
    - Measuring required quantity of item (eg. Rice, dal, salt, sugar, etc.) for cooking.
    - Preparing tea/coffee.
    - Kneading wheat flour.
    - Rolling chapatti.
    - Frying chapatti.
    - Preparing meal (rice, dal and curry).

While involving the students in cooking proceed form simple to complex task.

Before teaching the students to light the stove they should be taught to switch off the stove. To begin training in cooking activities the mother/family members should be near the student throughout the training period and should give necessary physical and verbal assistance. Of course, for many of the cooking activities, (preparing idly, dosa, tea, coffee, etc.) the students need to learn functional academics (measurement) which is discussed in detail in part II of this unit.

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Recreation skills:

Like us, persons with disabilities also require time for recreation. Many a time, they are unable to decide the activities for their recreation.

At school, fix a particular time for recreational activities when students can be given opportunity to participate in various activities like:

- arts and crafts.
- music/dance.
- decoration.
- gardening.
- embroidery/knitting.
- making decorative pieces out of wood.
- indoor and outdoor games.

Family members can involve students in:

- house decoration.
- participation in family functions/festivals.
- going for movie/picnic.
- listening music.
- indoor games.
- watching television.
- playing with siblings.

4.a.6 UNIT SUMMARY

The curricular contents for children with mental retardation for different levels including primary, secondary, pre-vocational levels has been described in detail. During discussion focus has been made on personal, social, domestic and occupational domains. All these areas are covered in curriculum content at all levels. However, the curriculum content and focus on training methodology and material differs at each level of stages of training. Different settings are necessary to develop various skills in the students. Hence, for teaching the skills to the children with mental retardation, environments including school, home and community settings, are appropriate to use. A combination of various techniques has to be used while teaching a particular skill. We may have to use different techniques for different students even for teaching the same skill. In order to sustain the motivational level of the students throughout the period of teaching, it is essential to use different activities while teaching the skills. Curriculum content

and various activities for teaching different skills have been explained during discussion.

4.a.7 CHECK YOUR PROGRESS

1. Describe the curricular guideline for the primary group of children.

2. How will you teach personal skills to the primary group of children? Discuss in detail.

3. Explain the importance of social skills for children with mental retardation at secondary level.

4. Training in social skills is important for community participation and future employment. Discuss.

5. On which areas emphasis has to be given during pre-vocational period and how to develop the skills in students with mental retardation.

6. Explain the activities for developing grooming skills.

4.a.8 ASSIGNMENT/ACTIVITY

Development a curriculum for three students at different levels of ability levels/groups (primary, secondary, prevocational). Use the content for developing IEPs for your case study.

4.a.9 POINTS FOR DISCUSSION/CLARIFICATION

4.a.9.1 Points for discussion

_____

_____

_____

_____

_____

_____

4.a.9.2   Points for clarification

4.a.10   REFERENCES/FURTHER READINGS

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UNIT 5: CURRICULUM EVALUATION, IMPLEMENTATION IN INCLUSION

STRUCTURE

INTRODUCTION

As you are aware, that the functional academics refer to the literacy and numeracy skills that are required for leading independent lives in the society. Since students with mental retardation have limited intellectual abilities, the academics which are irrelevant or less important for daily living activities are not covered in their curricular content. `Function oriented and applicability' in routine activities are the key factors in content decision for academics of children with mental retardation. Instructional process should be such that it involves practical application of academic skills learned in the classroom.

Further, it is important that the selection of content in functional academics for each student should be such that it prepares him/her to interact with people effectively in the community. Hence, we need to think of appropriate alternative methods and materials for each student to overcome his/her inability in acquiring skills.

OBJECTIVES

After going through the unit, you will be able to:

- Demonstrate understanding the need and importance of teaching functional academics to students with mental retardation.

- Describe the strategies for teaching functional reading and writing.

- Illustrate the procedures employed in teaching numerals, pre-computational and computational skills, money, time and measurement.

- Select content in functional academics and plan programmes for those children who cannot read and write.

FUNCTIONAL READING

Functional reading is defined as a student's actions or responses resulting from reading the printed word.

The following are the goals of reading for persons with mental retardation.

The primary goal is the development of their ability to read for protection – sign boards, labels, directions and so on (concept of survival).

The second goal is teaching them reading for information and instruction – newspaper, telephone book, job application and so on.

The third goal is giving training in reading for pleasure – magazines, comics, story books.

All persons with mental retardation may not be able to achieve all the three goals. Some may achieve one of the goals and some may achieve all of the three goals It depends on the severity/level of mental retardation i.e., the ability/capacity to understand and learn the tasks. Further, children to become effective readers they must be able to.

see a clear and unblurred image projected on the flash card and hear the sound of the letters and words uttered (auditory-visual sensory input).

distinguish one symbol from another and recognize these differences consistently (auditory-visual perception).

remember the sounds or images of the symbols in sequence (auditory-visual memory).

relate these symbols to meanings based on experience and synthesize the visual and auditory clues with the meaningful words for integrative learning (language symbolization).

Teaching Reading

Various approaches have been used by professionals in teaching reading to children with mental retardation. Among them whole word approach is extensively used.

Whole word approach (sight word/paired reading)

Whole word approach is a widely used method in teaching functional reading. Through the whole word approach, the students learn to recognize and read words and later receive decoding instructions (to spell). A variety of strategies have been used in teaching sight word vocabulary. Recent attention has been focused on the imagery level of the word to be learnt. **High imagery** words are usually **concrete** and include nouns such as ball, mango, fan and house. **Low imagery** words include **abstract** terms such as beautiful, good and have. In some instances, high imagery can be provided for low imagery words by using the word in context. For example, consider the word "sour", "I ate mango. It is sour", becomes more concrete and students can remember better. Pairing of words with concrete objects and/or pictures will facilitate development of a high imagery level in the students. Here, the concrete word `mango' helps in learning the abstract word `sour'.

Following are the steps to be followed while using whole word approach.

When we are teaching any concept to children, we follow three steps – matching/grouping, identification and naming.

Matching/grouping of words

- Select the words which are commonly used in the immediate environment (vegetables, fruits, furniture, body part, cloth). To begin with select words that grossly differ in sounds (table, chair). Later introduce words with some similarity in sound (banana, ball).

- Start with pairing activity using pictures with words. First have two pictures with their names written for pairing and increase the number as the student shows progress.

> Say the word while teaching matching/group ing of words to children
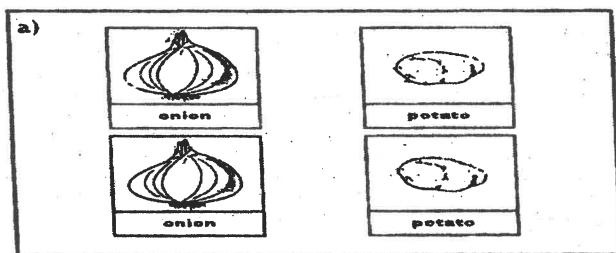
- As the student masters the above steps, have picture and word in one card, only word card without pictures in the other for pairing.
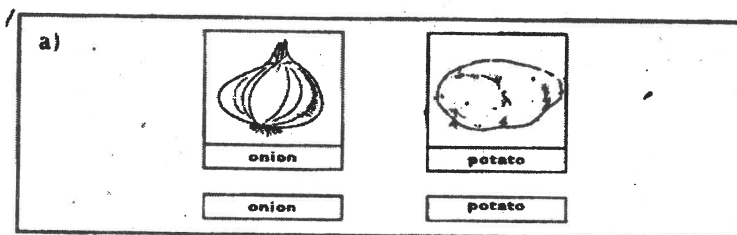
- After the student learns the above steps, have only word cards without pictures for pairing.

```
a)        onion        potato

          onion        potato
```
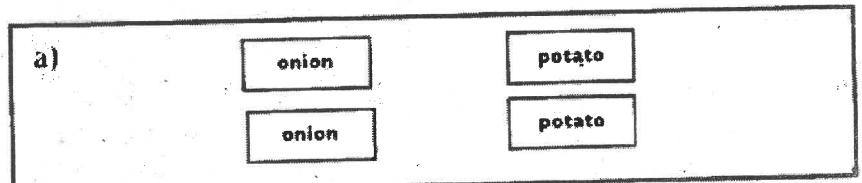
- Now the students have learnt to pair the words.

Identification of words

- The next step is to have the students point to words on the flash cards/worksheets when asked. A variety of exercises have to be developed.

Reading words

- Once the student identifies the words, he must be taught to read the words.

Another point we should keep in mind is that teaching reading and writing of words simultaneously helps in decoding of the words. When children learn few words, you can teach children to make phrases, and sentences.

Error analysis in generalization

The sustained ability for generalization does not just lie in analysis of success achieved, but also in that of the errors committed. When a student performs consistently a certain task after structured training, he is exposed to a non-trained condition, which will have certain similarities to the trained conditions. When the learnt response is performed in a non-trained condition, errors may occur. The teacher should be sensitive to the factors that contribute to the occurrence of the error and the ways in which they can be prevented. For example, we teach `3' and help the child to discriminate `3' from 5, 7, 13, 30, 53 and so on. The student understands that when the symbol '3' appears all by itself, only then it is called '3'. On a clock dial, when the child is asked to identify 1, he is right when he shows 1 after 12 but not at 10, 11 and 12 as the latter have accompanying numbers with them. This approach would limit to prevent errors from occurring right in the beginning during the acquisition stage itself, thereby making generalization easier. This helps in differentiating similar looking words and similar sounding words.

Teacher should

- Provide sufficient examples
- Be sensitive to learner's readiness before communicating.
- Demonstrate a range of variations within a given concept.
- Reward the student for his right responses.

FUNCTIONAL WRITING

One of the important modes of communication is written expression. Writing demands eye hand coordination, motor coordination, sense of direction and recognition of symbols (pictures/letters/numbers/words/ punctuation and so on). Some writing tasks demand horizontal writing (left to write as in writing words) and some demand vertical writing as in arithmetic (addition, subtraction) and some demand a combination of both as in statement sums.

Teaching Writing

Teaching writing involves four stages. They are:

1. Tracing
2. Joint dots (if needed)
3. Copying
4. writing from memory (including learning spelling).

To write sight words, students have to go through six steps using auditory, visual, tactile and kinesthetic inputs. For example:

(a) Teacher says the word and student repeats it (auditory).

Eg. Horse
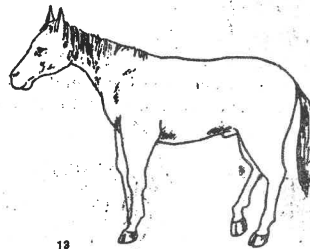
(b) The meaning of the word is discussed and taught (auditory).

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Horse is an animal.

Horse has four legs.

Horse riding is fun.

(c)   The words configuration is drawn (visual).

h o r s e

(d)   The actual word is traced (visual/kinesthetic).

(e)   The student says the sound of each letter while tracing it (visual, auditory and kinesthetic).
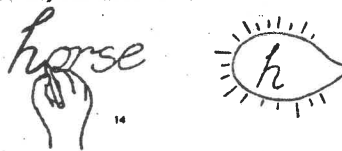
(f)   After tracing, usually the next step to follow is copying. If the child is incapable of doing it, dotted line letters can be given to join dots.
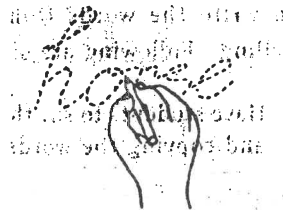
(g) When the child consistently copies errorlessly, writing from memory can be the next step. At this stage, prompts can be in the form of fill in the blank and jumbled letters.
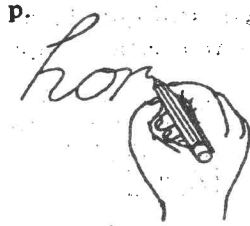
(h) Later, the student tri s to visualize the word and write it in the air (kinesthetic), saying simultaneously.

4.b.4.2 Teaching Spelling

To write the words from memory students should learn spelling. Following are some tips.

- Have students to say the sound of each letter while tracing and copying the words.

- As the student learns to match the individual letters seeing the model, remove the model and ask him to arrange the spelling.

- Tell the student to check the spelling by himself with the model. Allow him to identify error if any and correct it on his own. Following this, students may be asked to write the words in their note books.
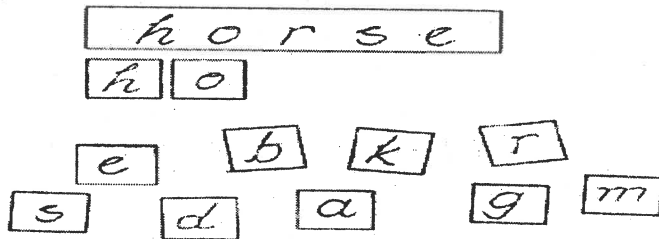
- Give dictation along with the words learnt earlier and tell the students to correct by themselves seeing the model.

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- You may also use the method of filling individual letter sounds of the words on a worksheet.

h o r s _
h o r _ _
h o _ _ _
h _ _ _ _
_ _ r _ _

In this manner, you can teach them to read a number of words, phrases, and sentences. In the process of reading and writing the words, the students also learn individual letters.

(For more details, read: Myreddi, V. and Narayan, J. (1988) Functional Academics for students with mental retardation – A guide for teachers. Secunderabad: NIMH)

FUNCTIONAL ARITHMETIC

We are in daily contact with situations which require the use of number skills. For example, when we buy half a dozen bananas from the fruit vendor we glance at the bunch to check whether it contains six bananas or not. We use number skills in various settings such as at home, in community and at work place - how many plates to place on the table, which bus number to take to reach work place, how much is the bus fare, how long it takes to reach office and so on.

Strategies for arithmetic instruction

Before beginning with numbers, make sure, the child is aware of pre-math concepts such as more-less, far-near, heavy-light, tall-short-long and so on.

The following are the points to be considered 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 materials should be used while teaching to provide meaning for the concepts.

(c)   The selection of materials should be such that they can be used meaningfully both inside and outside the school environment.

(d)   The programme should be structured in such a way that there is a gradual transition in teaching concepts moving from concrete to semi-concrete and abstract levels.

(e)   Instruction must be practical and functional with special emphasis given to a social and vocational orientation.

(f)   Sufficient practice should be given to deal with the concepts in variety of ways to ensure understanding.

(g)   Additional opportunities should be provided to generalize the skill to a variety of experiences to note similarities and to establish associations and relations among their experiences.

(h)   Practical experiences and situations should be provided for the application of numerical skills. However, care should be taken in planning the application of number skills to the real life experiences that they should have relevance to the world in terms of the individual child's needs.

(i)   A programme must be flexible enough to meet the individual needs of students.

Teaching number concepts

Prior to the teaching of number concepts, we need to understand the level of mathematical conceptual development in children. For this, Piaget's developmental theory provides approaches to understanding student's mathematical performance. According to this theory the student requires to understand the basic concepts such as classification before he proceeds to learn counting, addition, subtraction, multiplication and division.

Classification

Classification is the process which involves grouping of objects based on the defined characteristics that is likeness and differences. The ability to group objects according to common characteristics should be acquired in the process of developing the concept of number. To understand this initial skill the students may take a long time. Some of the strategies are given below for planning the instruction:

(a)   provide as many opportunities as possible to students to classify and sort out the concrete objects (for example, household things, vegetables, fruits, clothes, etc.)

(b)   To begin with, objects with obvious differences should be presented for classification (for example, spoon, ball, apple, banana, onion, chilli). Gradually the variety and the number of objects may be increased.

(c)   As the student progresses pictures are to be introduced to replace real objects.

(See SESM-2 Block-2 Units 1 & 2)

Ordering

Ordering means putting objects in a series according to the size or the number. This is another major concept children with mental retardation should understand in order to grasp the idea of number (different sizes of spoons, plates, utensils, nesting cups).

Ordering by Number

Ordering of objects by number may be introduced when students begin to see the differences in numbers. Once the students perceive the difference between two sets, more sets may be introduced and should be arranged in order. If the students do not see the difference, ask them to line up objects side by side to see which one has more. Later picture cards may be introduced for ordering numbers.

One-to-one correspondence

One-to-one correspondence is the basis for counting with comprehension. It refers to the student's ability to relate a unit in one group or set to a unit in another group or set, regardless of the possible dissimilarity in the characteristics of groups. Correspondence is vital for the subsequent teaching and learning of addition and subtraction.

Teaching this concept can be initiated first by introducing two sets of three-dimensional objects, each of which contains the same number of objects. Then the student will be asked to match an object in one set with an object in another set. Gradually the number of objects in the set may be increased with variation in terms of shape, size and colour.

Practical activities such as setting the table for the class or for the family, playing a game of musical chairs and so on, can be planned for teaching the concept. After having considerable experience with concrete objects, you can introduce worksheets for teaching.

Strategies for teaching pre-computational skills

Counting

While teaching counting, you may ask students to count familiar objects within their immediate classroom environment such as number of tables, chairs, windows, doors, books, etc. During lunch break, ask students to count their classmates for placing plates, glasses, and spoons for eating food.

Cardinal and ordinal numbers

Cardinal number answers the question "How Many". Whereas the ordinal number indicates the position. Make children to stand in a row. Ask who is standing in the first/second/fourth position (ordinal). Also ash how many of them are standing in a row (cardinal). Teachers can plan many more activities in the classroom and outside to teach the concept.

Writing number symbols

The techniques employed in any symbol-writing task may be used in teaching students to write the numerical symbols, that is, tracing, copying and reproducing from memory. Rough textured numerical symbols, for example, sand paper symbols provide good tracing device.

- First discuss the shape of each numeral before introducing writing of numbers.

- Once students learn to write the numerals, present randomly the groups of concrete objects and request them to write or place the number1 symbol.
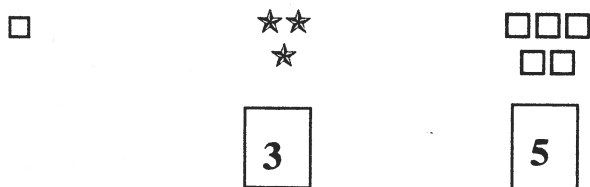
- Next dictate the number and ask students to write the number and group the objects.

```
┌─────────────────┐
│                 │
│  3    OO        │
│        O        │
│                 │
│  5    OOO       │
│        OO       │
│                 │
└─────────────────┘
```
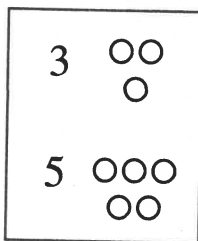
- Lastly ask students to write the number and also group the objects or draw pictures to indicate the quantity.

Teaching numerals above 10

While teaching the numerals above 10, tell the students that the ending on twenty, thirty, forty and so on equates 2 or 3 or 4 groups of 10s. While teaching the numbers above ten, first make students to count the blocks upto ten as a group and continue through the other numbers.

For example, twelve.

- Use beads/blocks or any concrete objects to explain ten and two blocks = twelve blocks. Later the blocks may be placed together as one group. The activity may be changed to pictures instead of concrete objects.

```
OOOO              OOOO
OOO               OOOO
OOO    +   OO  =  OOOO

10          2      12
```

- Ask the students to expand the given number using concrete objects in the beginning and later to draw the pictures to indicate the quantity.

$$13 = \begin{matrix} ★★★ \\ ★★★ \\ ★★★★ \end{matrix} + \begin{matrix} ★★ \\ ★ \end{matrix}$$

10   3

- Lastly tell them to expand the numbers by writing numerals.

$$13 = 10 + 3$$

The workbooks and text books for children from kindergarten to second or third grade will be of use to teachers in planning arithmetic activities. However, the teachers may need to revise the activities and workbooks to suit the needs of children with mental retardation. You may refer the ones developed for children with mental retardation by NIMH (Functional Numeracy Series (1998), Software packages (1997).

Teaching addition and subtraction

Addition

Piaget points out that addition is the basic operation upon which all other computational operations are constructed. Therefore, it is important that you plan out instruction for the clear understanding of the concept of addition. The activities in the initial stage of teaching should be very concrete. Before the symbols of plus (+) or equal to (=) are introduced, the concept has to be developed using familiar objects and situations. For example, if we have 4 books and 3 pens (concrete objects) how many objects do we have? If we have 3 green pencils and 2 red pencils how many pencils do we have?

books   pens

To introduce the plus sign make a three-inch by three inch flash card with (+) symbol and one with (=) symbol. The plus sign is then introduced between the two groups. As the students understand that the plus (+) sign means putting together the two groups, the word plus is introduced. Also transition should take place from the less precise verbal statement "two apples and three apples make five apples' to precise "two plus three equals five".

In the first stage of simple addition, write equations in a horizontal array instead of in vertical arrangement. This will reinforce not only the left to right progression necessary in reading but also aids in using concrete objects and pictures in the arithmetic activities. An arrow could be drawn below each equation to aid the students to know where to start

$$3 + 4 = 7$$

Gradually the transition from writing equations from horizontal to vertical array should be done before teaching sums.

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$$
\begin{array}{r}
3 \\
\pm\,4 \\
\hline
7
\end{array}
$$

Some children may learn only horizontal/vertical. It is alright, as long as they learn addition.

After having many experiences in combining sets upto nine, the use of zero in addition may be introduced. The concept of zero can be introduced by indicating that it represents an empty set of group. Since there is nothing in the group to add to the other set. The total remains same.

Subtraction

Subtraction is the opposite of addition. The procedures described in teaching simple addition can be used in teaching simple subtraction. The concept of groups should be used in the beginning of teaching subtraction. Instruction should proceed from total use of concrete objects to abstract forms as described under simple addition. Verbal statements will help to emphasize the process at all stages. Before introducing the terms `minus', the terms `take away' and `left over/balance' should be used when the children are engaged in subtraction activities. The use of zero in simple subtraction should emerge in the same relative sequence as it did in addition. Constant focus on the use of the groups and the concept of any empty set will help the notion of zero to develop.

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\begin{array}{r}
3 \\
+\,4 \\
\hline
\\
\hline
\end{array}
\qquad\qquad
\begin{array}{r}
5 \\
-\,3 \\
\hline
\\
\hline
\end{array}
\qquad\qquad
\begin{array}{r}
4 \\
-\,2 \\
\hline
\\
\hline
\end{array}
$$

$$
\begin{array}{r}
6 \\
+\,3 \\
\hline
\\
\hline
\end{array}
\qquad\qquad
\begin{array}{r}
3 \\
+\,3 \\
\hline
\\
\hline
\end{array}
$$

It is also important that the students understand when the process of addition or subtraction is to be used. For this, early experiences in addition and subtraction

should be combined with activities which will help the students develop a firm understanding of number.

Teaching carryover and borrowing sums

Students should have the understanding of place value if they have to do two and three digit place addition and subtraction and particularly when it involves carrying over and borrowing. For teaching this concept, the teacher can use the place value box. This is a small plywood box with three equal sided compartments into which sticks are inserted. The compartments are appropriately named "ones", "tens", and "hundreds". In the introductory stages the activities should focus on experiences with manipulating objects.

H	T	O
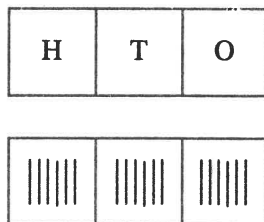
The next stage in teaching place value is carry over of the earlier instruction involving combinations and grouping. At this point, the students must understand that whenever the "ones" compartment reaches ten, the group of object is to be bound together (with a rubber band) and place in the tens compartment.

Further the youngsters with mental retardation may continue to need concrete objects even when they reach secondary school level. If students require such devices, they should be allowed to use them. As the students learn to do simple carry over sums, teacher can introduce addition which requires the carry over of two digit numbers and eventually introduce hundreds column. Students can also be encouraged to use the calculator for minimum operations for arithmetic calculations.

The fundamental principles used in teaching borrowing are same as those used in carrying over. Hence, these two operations should be taught in close continuity. Place value box can be used for teaching borrowing. Make the student understand that borrowing involves breaking down of tens into ones and relocating them in the ones compartments.

Moreover, opportunities should be provided to employ the skills in practical situation. Montessori material designed for teaching place value, carryover and borrowing can also be used in teaching the concepts.

Teaching multiplication and division

Many children with mental retardation do not reach this level. However, never give up without trying. Multiplication is a short cut for addition and division is a short cut for performing successive subtraction. The students who show certain potential to learn simple multiplication may be introduced to the process by first adding three numbers example, $2 + 2 + 2 = 6$. The next step is to make students regroup as 3 twos or two times three to make 6. For this students may use the multiplication tables or counting during the initial stages of instruction.

While teaching the concepts of division place emphasis on the notion that the division is the process of breaking up of large group into a number of smaller but equal groups. `Fair sharing' is the concept that the students should understand. For example, we have 6 flowers and there are 3 children. How many flowers can each child have? Students may work with multiplication or token counters until the idea or equal groups is firmly established.

Strategies to teach time, money and measurement

Time, money and measurement are simply applications of mathematical concepts in daily living and hence very essential for students with mental retardation.

Money

Instruction about money should follow a sequence throughout students education. Practical and real life experiences should be provided for the application of skills. Moreover, the instruction has to be planned in such a way that each student's needs in terms of utility are met.

The sequence for teaching money is as follows:

- Discuss the use of money to develop the concept of value and the understanding that it is used in exchange for goods and services.

- Teach students to name the rupee notes and coins.

- Develop an understanding of the values of rupee notes and coins. It can be often confusing to the students when he relates size of coin and its value. For instance, Rs.5.00 coin is worth more than the Re.1 coin but the size is small in size when compared to Re.1 or Rs.2 coins.

- Learning the equivalent value of rupee notes and coins.

- Counting groups or mixed coins totaling upto Rs.5, 10, 15, 20, etc.

- Students should learn to write amounts.

- The next step is to add amounts of money. This is also a foundation for decimals.

- Making change for amounts over one rupee.

- Older and high functioning retarded children should learn to write cheques. Bank accounts (both cheque and savings) should be introduced to secondary/prevocational students. This topic should be an important unit for prevocational in their curriculum.

Real money should be used to teach rupee notes and coin recognition and change making and to make use in simulated purchases of various items. For example, a student has Rs.5 and purchases an item for Rs.3, he determines how much change he has to receive. The teacher does not have to worry about transference of learning from play money to real money, if he uses real money in the first stage of learning. Teacher should also take them to nearby shops/supermarkets for purchasing items as a part of instruction. This would help in minimizing the problem of generalization of learned skills.

A workbook using pictures of real money provides interesting work for many students. The workbook should include activities on recognition of rupee notes and coins, relative value of rupee notes and coins, deriving correct change from purchases of various items and such other exercises.

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For older children, the use of pay cheques, saving accounts and home budgets may be taught. Home budgeting may be taught using ditto sheets of bills and statements for utilities, rent, food and clothes. Basic book keeping skill also may be taught, to help them in keeping a home budget. During the process, the students to maintain home records, filing receipts and so on.

Banking skills also should be taught directly. The student should learn how to deposit and withdraw money, write and maintain a saving account.

Currency based token economy

Alternative to workbooks or a simulated unit on money is a currency-based token economy in the classroom. Token economies are usually developed to motivate students to do their work or to control disruptive behaviour. A currency based economy may be used effectively to teach counting, tending exact change and the relative value of the money. It provides an environment that promotes decision making regarding the safe keeping of money, what can and cannot be purchased with money on hand, how to save money and other concepts. At the vocational level, students can be paid for coming to class on time, punching in and out, getting to work quickly without delay and doing accurate work.

Time

The first instruction in time should be to develop an understanding on the concept of time as a unit and as a sequence of events. A pre-requisite to telling time is an understanding of time itself. Concepts of today, tomorrow, yesterday, next week and so on are basics to understanding time. Next, students need to understand that certain things happen at certain times, like lunch break and end of class. The schedule of events greatly aids in teaching time.

The sequence for teaching time

- Student must understand the ordering and the sequencing of the day. Discuss with students what they do from the time they get out of bed in the morning until the time they go to bed at night. This type of conversation will help them develop association of time and activities. Use pictures to represent these activities.

- Discussion of time may be extended to longer periods such as the week, month and year or other combinations of time periods, using the activities with which the child is familiar. Holiday can often be used to help the student develop this sequence.

- Children also need to develop an understanding of the passage of time. The concept of "How Long" can be developed through familiar activities such as the length of television shows and classroom activities. Short intervals of

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time may be understood by as activities tapping a foot for one minute and then two minutes or standing on one foot.

- Children should then estimate the duration of one minute in a variety of activities, such as closing their eyes and listening to music. They often suppose that the speed of the activity determines the speed of the passage of time. A wide variety of activities are needed to help students develop the concept of duration.

- Once students understand time and the vocabulary of time (minute, hour, day, week, month and year), they are ready to learn to tell time and to use a calendar.

One way of teaching, how to tell time is to have the child count from 1 to 60 on a number line. The child then superimposes 1 to 12 on the 1 to 60 lines (the 1 to 12 number line should be the same actual length as the 1 to 60). Counts off every five minutes, and marks them in different colours. This number line is then placed on a large clock with the hands removed or on a teacher made clock face of the appropriate size without hands.

The 1 to 60 number line will correspond with the minute markings on a clock and the 1 to 12 number line will correspond to the hour making on a clock. This will help the child understand the function of the clock face. This will help the child understand the functions of the passage of time in minutes. When this concept is understood, the hour hand may be attached and used to indicate how may times the minute hand has gone around. Knowing multiplication table 5 is helpful here. Teacher may also use digital watches for teaching time.

Volume

The use of quarter, half and one litre and gallon containers will help in developing an understanding of volume. Initially students may be allowed to measure the water, sand, etc. with the measuring cups. The students may be given practical experience of measuring water for making hot drinks measuring milk etc.

Weight

The concept may be introduced first by finding out the weight of each student and maintaining a weekly record. Activities of various types, which involve measuring the weight of flour, sugar, dhal and other commodities will provide a first hand experience of using weights. These activities may be incorporated in teaching home skills (cooking) to students.

Distance

In the beginning students may be asked to measure the area of books, tables, doors, windows etc. with a stick. Also draw lines on the floor and ask students to measure with a scale or with feet. Most youngsters with mental retardation will find it difficult to learn the measurement vocabulary and its use in metres, centimeters, millimeters of yards, feet, inches. However, the potential students may be taught if there is any practical use of the skill in the working situation.

FUNCTIONAL ACADEMICS FOR THOSE WHO CANNOT READ AND WRITE

The teaching of functional literacy and numeracy skills are suitable for those who care capable of learning to read and write to some extent. After giving a fair chance to the student to learn functional academics, if he does not seem to learn, alternatives need to be found. When we say functional academics, it refers to the literacy and numeracy areas that are used in our day-to-day living. As seen earlier, many retarded students with higher functioning levels are capable of learning and utilizing these skills. However, those with lower functioning levels, who cannot learn abstract concepts and symbols may never learn these skills. Therefore, the teachers are to find alternatives for these students to effectively function in the communities. The following steps can help:

Identify the requirement of a student to use written script for reading, writing and numbers. For instance, bus number, directions, notice board in the work place and so on.

Note down the frequency of the need. To know this information, classify the needs such as number of times in a day, once a day, or weekly or monthly or occasionally.

For example:

Daily needs

    Bathing

    Brushing

    Dressing

Weekly

    Wash bed linens

    Visit the place of worship

    Iron clothes

Occasional

    Go for movies

Visit relatives

Celebrate festivals

Monthly

Buy provisions

Pay electricity bill

Clear cobwebs

- List them in the order of most frequent to least frequent.

- Identify the activities that involve reading and writing and math skills.

- Explain to the student the requirement of the written materials in context. Give abbreviations of cards of written materials to keep in the pocket and train him to show to people and ask. For instance, showing the card (bus number and place) to a person in the bus stop who is waiting there and asking him whether that bus is gone.

- For needs that are infrequent, but highly important such as missing a bus and break down of a bus, prepare the student with one good option or alternative. Giving him too many alternatives will again confuse him. Firstly, the student needs to be taught to perceive that he has missed the bus or the bus will not go further due to breakdown. Secondly, the options such as, go to the nearest shop, take help using cards as explained above are to be taught. As such occasions are less frequently occurring, asking him once in a while as to "what will you do if you miss the bus/bus breaks down" and eliciting response will help in retention of the learnt competency.

- Sensitize the students to find alternatives for written materials such as commonly used signs found for drinking water, toilets, arrow marks of directions and so on.

- Where signs are not found, generate ideas and develop signs that your student follows and have it written in script at the bottom so the helper understands what he needs. Communication boards which are commonly used for children with speech deficits will be useful here for mentally retarded students, specially for children who are non-verbal. Small pocket size photo albums or visiting card books with the student-specific functional signs included in it will go a long way in help him compensate for his inability to speak.

- Efforts towards explaining purposes of railway/bus time-tables, newspaper, magazines and notices will help a student understand their content and utility. This in turn may motivate him (or the trainer should take efforts to motivate him) to acquire the social competence to approach people with the

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literature and ask for specific information from it. Thus, though the retarded person is illiterate, he would have taken the benefit of the literature. Here, the teachers play a very important role in identifying and grouping the relevant literature and giving the student the input to appropriately use them.

(Source: Myreddi, V. and Narayan, J. (1988) Functional Academics for students with mental retardation. Secunderabad: NIMH)

UNIT SUMMARY

- Currently, the special education programmes for children with mental retardation, emphasizes on activity based curriculum, which has direct utility to the environments in which the children live. Hence, the curriculum content under academic area should include reading, writing and arithmetic skills which are functional and have utility in day-to-day life.

- Functional academics include reading, writing, pre-computational (numerals) and computational skills (addition and subtraction, multiplication and division) and mathematical applications (time, money, volume, weight and distance).

- Reading and writing should be taught simultaneously ie., a reading activity follows writing activity.

- Concrete experience along with a variety of activities should be provided during initial stages of learning.

- Activities should be planned in such a way that teaching and learning occurs in natural environment (eg. Shopping, traveling).

- There is also a need for selecting curriculum content in functional academics for students (with low ability) who cannot read and write that prepares them for independent living as far as possible.

CHECK YOUR PROGRESS

1. What is functional academics?

2. Explain the steps involved in teaching functional words using whole word approach.

3. Explain the steps followed in teaching writing words with an example.

4. Discuss the procedure in teaching the following: (a) numerals above ten, (b) addition and subtraction.

5. Explain the sequence of teaching time and money to children with mental retardation.

6. Discuss the methods of teaching functional academics to children with mental retardation who cannot read and write.

ASSIGNMENT AND ACTIVITY

Develop any two activities and materials for teaching numerals, addition, subtraction, money, time and measurement. Select children who require instruction in the above skills. Teach using your plan and evaluate and measure the effectiveness of the programme.

POINTS FOR DISCUSSION/CLARIFICATION

After going through the unit, you may want to have further discussion or clarifications of some points.

Points for discussion

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Points for clarification

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BLOCK 2: CURRICULUM AT PRE-SCHOOL AND PRIMARY SCHOOL LEVEL

UNIT 1: SIGNIFICANCE OF EARLY CHILDHOOD EDUCATION AND SCHOOL READINESS

STRUCTURE

- o Introduction
  - o **Objectives**
  - o **Profound Mental Retardation**
    - Who are persons with profound mental retardation
    - Characteristics
    - Educational provisions
    - Curricular content
    - Training strategies
  - o **Multiple disabilities**
    - Who are persons with multiple disabilities
    - Characteristics
    - Children with sensory impairments
    - Mental retardation with locomotor disabilities.
    - Educational provisions
    - Curricular content
    - Teaching strategies
  - o **Multi-sensory approaches**
    - Definition
    - Historic perspective
    - Application of multi-sensory approaches for children with profound and multiple disabilities
  - o **Current trend in the education of children with profound and multiple disabilities.**
    - Concept of zero reject
    - Home based training and parental involvement
    - Teacher preparation
    - Use of analysis of biobehavioural states for training

o   Unit summary

  o   Check your progress

  o   Assignment/activities

  o   Points for Discussion/Clarification

  o   References/further reading

1.1   INTRODUCTION

Educational service provisions have increased in number and improved in quality for children with mental retardation. Yet, many a time a child with profound mental retardation on having additional disabilities along with mental retardation is rejected from school systems. The parents run from pillar to post seeking admission. If we have to achieve 'zero reject' in the educational provision for all children this group should not be ignored. Suitable service model and appropriate educational facility must be developed for such children. By nature being a low incidence condition, children belonging to this category must be carefully assessed and suitable curricular guidelines should be drawn. This unit discusses viable methods for those with such profound disabilities.

1.2   OBJECTIVES

On completion of this unit you will be able to;

- demonstrate understanding of the characteristics of children with profound mental retardation and multiple disabilities.

- show awareness of the existing educational provisions for them.

- develop curricular guidelines for them.

- use appropriate teaching strategies

- demonstrate understanding of multi-sensory approach to teaching.

- show awareness of current trends in their education.

1.3   PROFOUND MENTAL RETARDATION

5.3.1   Who are persons with profound mental retardation?

You are aware that persons with profound mental retardation have an IQ below 20 and educationally they were classified under custodial group (refer Block 1 Unit 2). In India currently, we call them as 'care' group as they need to be given total care

for their survival including the performance of daily living activities. They are also medically fragile, usually having associated conditions like epileptic fits, requiring medical treatment and medication. As noted by Wold and Anderson (1969) the more severe profound the handicap, the greater the likelihood of additional handicapping conditions. In effect many profoundly retarded persons may be considered multiply disabled.

From the view point of educational planning, we may describe persons with profound mental retardation as those whose ability to provide for their own basic life sustaining and safety needs is so limited relative to the proficiency expected on the basis of chronological age that it can pose a serious threat to their survival. (Baker 1979; as quote din Greer et. al. 1982)

1.3.2 Characteristics

Children with profound mental retardation are relatively small in number and represent a heterogeneous population. The exact prevalence rate is not possible to estimate due to the complexity of the problem and the multiple disabilities involved. Divergent population, inadequacy of assessment tools and techniques and sociocultural differences make it difficult to arrive at the exact prevalence rate.

The most common characteristics of profoundly retarded persons include dependence on others even to carry out activities of daily living. In addition, lowered resistance to diseases, sensory and motor deficits and many a time gross physical abnormality and neurological involvement are observed in persons with profound mental retardation.

Restricted communication ability is another striking characteristic. Meaningful communication, if at all achieved, is usually restricted to few nonverbal gestures or physical contact such as touching, pulling or patting.

Most of them have additional impairment of hearing, vision or motor abilities.

As noted earlier, they are called as children in `care group' as they need total care.

1.3.3 Educational provisions

Historically persons with profound mental retardation died naturally at birth or were put to death at a very early age. In some parts of the world, they were isolated from society. Gradually, humanitarian concerns evolved. According to Hawett (1974) four distinct treatment determinants can be traced through the history of civilization namely. 1. Survival, 2. Superstition, 3. Science, 4. Service.

In primitive societies, `survival of the fittest' was the belief and practice and therefore persons with deformities were killed or subjected to conditions that led to death. Later the superstitions took over, considering such people as `possessed' and

therefore abandoned and alienated from society. With the development of scientific enquiry such individuals were subjected to studies, leading to categorization and classification. This inturn led to development of suitable services for them. The services ranged from institutionalization to inclusion through the years upto the present day.

The educational provisions for persons with profound retardation was considered necessary only after the Governments in various countries implemented laws for education of the disabled persons. For instance in the United States `Education for all Handicapped Act (1975), popularly referred to as P.L. 94-142, required that every child with disability has a sight to free, appropriate public education. It demanded `zero reject'.

To achieve this `appropriate education' and zero reject educational provision had to be `suitably' made for those with profound mental retardation. Schools had to admit these children with suitable infrastructure, human and material resources.

In addition homebound training programmes evolved in various parts of the world, as many of these children are on ambulatory and thus not able to reach schools.

Currently the various educational provisions include, special school, special class in regular school, integrated education in regular classroom, resource rooms, residential facilities and homebound programmes. The details of these set-ups can be seen in SESM-3, Block 4, Unit 2.

Among the various service provisions, the ones best suited for Indian conditions are special school and homebound instructions.

As these children with profound mental retardation need individualized educational programming and one-to-one instruction they need special attention. This demands that in special schools, the teacher student's ratio kept at 1:3 or 4 so that each child is given adequate attention. We know that such children should be given training in the most basic skills of self-feeding and toileting. This is one reason for many special schools rejecting admission to them. Infact, many special schools have `independence in toileting' as an eligibility criteria for admission. This certainly is not an appreciable trend. A special educator should not deny any child from providing the required training.

In India homebound instructions is a service model found suitable for children with profound mental retardation. Our country has a well-knit family system where the family members are helpful to each other in crisis and difficulties. Cashing on this advantage, the homebound programmes can be carried out.

Homebound programme can be carried out through two channels 1. Home based 2. Center based.

Home based is a programme where the special educator visits the child at home and trains the parent or family member in training the child. This has certain advantages. Primarily the trainer understands the resources, habits and practices of the family members and trains the retarded child to fit into the system of the family. Thus, the transfer of training is minimized, as the child gets trained in his natural environment.

In center-based training the parent brings the child to a center where a multi disciplinary team or one professional in the field of mental retardation will provide training to the parent of the child in a phased manner. The child and the ward would periodically visit the center get the training and carry out at home. This is a suitable model where there are no special schools. The National institute for the mentally handicapped provides center based service facility, where mentally retarded persons from various parts of the country attend and receive expert services.

1.3.4 Curricular content

The basic content of the curriculum for children with profound mental retardation should include activities including motor areas, personal care, communication and socializations. To be effective in training in these areas, the sensory abilities need to be sharpened. Multisensory involvement is essential for achieving success in training of children with profound mental retardation. Greer, Anderson & Odle (1982) suggest following contents for curriculum for children with profound mental retardation.

Motor skills: The following are just a few of the activities instructors can use with the children. Simple activities should be used in the beginning and complexity increased slowly.

Variety is important. The child should not become skillful in only one activity but should develop flexibility of movement.

Have the child practice starting and stopping on command. This can be done for a variety of movements, running, jumping, hopping, etc.

Have the child (or children) crawl, walk, march, jump, and climb over, under, around, and through chairs, tables, cartons, cylinder drums, ropes tied between chairs, and so forth as in "Simon says" or "Follow the Leader." This is a good time to name body parts and point to them. If a child is functioning on a higher level, begin right and left discrimination.

Using balls, bean bags, etc., have the child shoot at targets on the wall, into boxes and baskets of varying sizes, and from varying distances. Throw and toss at graduated circles on floor.

Beanbag and ball games provide excellent training in eye-hand coordination and kicking games stimulate eye-foot coordination. Little agility is involved when an object is thrown or caught in a standing position. To incorporate agility, movements such as running and jumping should be included as the beanbag or ball is caught or avoided. Because beanbags are easier to handle, they should be used first.

Use rhythm-band instruments, hands, feet, and total body to teach rhythm. Have the child jump to rhythm, hop, and so forth. You can also have the child exercise to music by kicking legs, bending the torso, raising the arms, etc.

Have a group of children gallop in a circle as if they are circus horses and then change direction at the beat of an instrument. Also have them move individually, changing from galloping to trotting, running, or walking, as they choose. Encourage them to demonstrate their movement sequences to each other. You may have the children perform any of the steps in pairs, holding hands or with arms crossed behind their backs. If a child has difficulty galloping, he or she may practice by lying on the back and making a bicycling movement with the legs in a one-two, one-two rhythm. If necessary, you can guide the legs.

Have the children step through the spaces in a ladder when it is lying on the floor. You can also use lines on the floor, hula-hoops, and so forth.

Fine motor activities: The following activities have been found to be useful in stimulating a child to be alert to the environment, become more aware of hands and body, and to reach out and grasp.

Gently rub the child's hands, arms, legs and feet with a variety of textured materials such as terrycloth wash cloth, a sponge, a piece of carpet, and ice.

Tie bells on the child's shoes or sew bells on elastic wristlets.

Engage the child in sand and water play. Place ice cubes or toys in food coloring to color the water or add bubbles for a variation.

Bury objects in sand and help the child find them. Sit the child in the sand so he or she can feel the sand on the feet and legs as well as on the hands.

Drape a diaper or piece of material over the child's head and face and encourage him to pull it off (as in "peek-a-boo").

Lightly wrap brightly colored yarn around and in between the child's fingers of one hand and encourage him or her to pull it off with the other hand. Alternate hands.

Provide small grasping toys or parts of toys for the child to grasp and examine: e.g., rattles, bells, squeeze toys, pop beads, a plastic ring with string attached, blocks, nesting cups, etc. If the child sits in a chair with a tray, attach toys to the tray. If

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there is no tray, make a table out of a cardboard box. String toys on a string and attach to the top of the box. This will provide a source of stimulation through objects at times when you are not able to work with the child.

Improving eye-hand coordination: As a child is reaching and grasping with a whole hand and a pincer grasp, he is developing accuracy of eye-hand coordination. Some handicapped children, however, continue to have limited or poor arm and hand control reaching and placing objects. In order to improve accuracy of eye-hand coordination:

Begin with activities that require reach and placement at close range such as building block towers, placing forms in form board or shape sorting box, placing rings on ring stack, or placing pegs in pegboard.

Use activities that require the child to reach and place a hand on distant objects. Have the child point to the eyes, nose, and mouth on the image in a mirror. Have the child poke at bubbles blown in the air. Hold pegs, blocks, or rings at different positions in front, to the side, and above the child and encourage the child to reach before placing them.

Following the above activities, have the child aim and throw at targets. As skill develops, move the targets further away from the child or make the targets smaller.

Personal care

Feeding brushing, toileting, bathing and dressing are basic personal care ares for children with profound mental retardation.

Self-feeding

The self-feeding skills begin with basic training to suck and swallow and gradually chew, pick up and eat dry food independently, eat when mixed and given and finally mixing and eating by self without spilling.

Many of the profoundly retarded children have difficulty in sucking, chewing and swallowing, positioning them properly before feeding is very important. One common reason for inability to chew food in these children is their inability to move food with tongue. Tongue control can be checked by placing child's favourite food item like jam/chutney/honey on the corners of the mouth and see if he licks without difficulty. If there are physical limitations he cannot lick the food. To encourage chewing, place food at the inside of the cheek next to the molars alternating sides. Initially let the food be soft.

Brushing

To ensure oral hygiene, wash mouth immediately. In some places, it is a practice to apply toothpaste mildly on the teeth after food and leave it as it is. This would prevent germs from invading and raining the teeth. Many of these children have difficulty in spitting during tooth brushing. With the advice of the dentist, it is all right to apply non-foamy toothpaste and leave it as it is after feeding.

Toileting

Indication of toilet needs using toilet when needed and controlling urination/defecation until reaching the toilet are basic consideration. Using the toilet independently washing self after toileting and flushing, dressing after toileting and maintaining privacy are the next part of the training content.

Adaptation of toilet seats, attaching tubes to taps for ease of working after toileting are some examples of structural changes. The child has to be trained by maintaining a toileting frequency chart. He should be appreciated for maintaining dry underclothes between toileting.

Bathing

If the children have motor deficits comfortable seating arrangements should be made. Use of towel with rings for holding or long brushes help him in independently rubbing the back. Ensure that bathrooms are not slipping Initiate training for bathing in summer when children enjoy staying in water.

Dressing

Fine motor coordination of buttoning, buckling and tying ribbons/pyjamas/shoe lace are difficult part of dressing for these children. Use Velcro instead of buttons, elastic bands, ribbons/tapes so that the children are independent in dressing. Provide shoulder button instead of back buttons for girls so that they can fix it on their own.

The curricular content should also include independent mobility within the house, avoiding danger and hazards, and carrying out simple, routine chores in the house such as drying clothes, sorting and transferring vegetables bought from the market into their respective places in the house and such other task. Ensure that the activity given to him is not harmful to him and/or any object at home.

Communication and socialization

These children have minimum communication abilities, which is necessary for enhancing socialization. Many of these children are non-verbal or have limited

expressive vocabulary. Encourage use of gestures where possible and appropriate use of communication board. (see SESM 2 Block-2 Unit 4).

Above all allow, the child to express his needs. Do not be in a hurry to fulfill his needs before he asks. Wait for him to express and even if he is approximately close to the correct expression reward him. Enhance listening and responding skills by providing variety of opportunities.

1.3.5 Training strategies

The training strategies in general are described in Block-2 of this paper. Particularly in Unit 1 and 2. By and large, the strategies remain the same for all children with mental retardation, irrespective of their degree of retardation. However, those with profound mental retardation require extended periods of physical prompting accompanied by verbal instruction. Every task needs to be broken down to smaller units and taught a little at a time. Every near successful attempt should be rewarded to reinforce the child's learning. The reward can be a gesture that pleases him or a material that he likes.

Understanding abstractions are difficult for children with profound mental retardation. Therefore, while teaching use concrete objects as far as possible. As their listening skills are limited do the activity and show to child and do along with him wherever appropriate. Learning by doing helps in learning faster and retaining the learnt skill.

Always select activities that are age appropriate, necessary for his independent living and is in line with the practices in the family.

1.4 MULTIPLE DISABILITIES

From the viewpoint of a layman multiple disability simply refers to more than one disability. For educational purposes persons with multiple disabilities are defined as:

If the combination of impairment causes such severe educational problems that they cannot be accommodated in special educational programme solely for one of the impairments, those children are considered multi-handicapped.

U.S.Federal Register 1977

This definition also indicates that educational provisions for single disability does not suit such children. Let us see here, how such children can be helped.

1.4.1 Who are persons with multiple disabilities?

As seen above any person who has a combination of disabilities is multi disabled. The combination can be mental retardation with hearing impairment and/or visual

impairment, and/or loco-motor disabilities involving limbs such as those deformities arising from accidents, birth defects or cerebral palsy, A multiple disability can be a combination of any two or more of the above mentioned disabilities. Since our focus is mental retardation, let us consider those who are mentally retarded having visual, hearing and/or locomotor disabilities.

1.4.2   Characteristics

As seen earlier many children with severe/profound mental retardation can have additional disabilities. It is also possible that children with mild or moderate mental retardation can have visual, hearing or locomotor disabilities.

1.4.2.1 Mental retardation with locomotor disabilities.

A considerable number of children with multiple disabilities have motor involvement. Many severely/profoundly retarded are by nature non-ambulatory. The others may have motor problems due to congenital deformity, cerebral palsy, or due to infections and accidents.

Children with mental retardation and locomotor disabilities usually are found to be affected by cerebral palsy (CP). A small number are also seen with both defects. Many children with CP have average or above average intelligence, but a considerable number are mentally retarded.

Types for school readiness

A child with CP can be spastic-with tense contracted muscles. Athetoid with constant uncontrolled motion of head, limbs and eyes, rigid with tight muscles that resist efforts to make them move. Ataxic with poor sense of balance causing stumbling and/or falls.

Depending on the involvement of the limbs, they are called as children with monoplegia, diplegia, quadriplegia or hemiplegia.

1.4.2.2 Children with sensory impairments

This refers to those who have impaired vision and/or hearing. Such children have difficulty in learning, as we know that retarded children learn better through multi-sensorial input and these children lack sensory ability. For instance, mentally retarded children have developmental delay and we stimulate them with various activities involving vision, hearing, touch, smell and taste. When ability to see is absent the child will not be attracted by the toys in front and will not reach out or move towards it. Thus the motor activity of mobility is delayed. Similarly, the child who already has mental retardation has language delay. When he/she does not hear any sound, there will certainly be further delay in speech and communication.

As such, children with mental retardation and additional sensory/motor disabilities will pose overall challenges in learning various activities for daily living, mobility and communication skills.

1.4.3 Educational provision

Educational facilities in the form of special schools or for that matter in any other manner are very few in the country. The reasons are many.

- The combination of disabilities is so varied that one specific programme cannot be developed.

- The condition itself has such a low incidence that exclusive schools may not have adequate number of children attending.

- Setting up exclusive service provision to such small members is not economically viable as it needs equipment, professionals from varied disciplines including speech pathologist, physiotherapist, occupational therapists, special educators, orientation and mobility instructors and medical professional.

- Lack of transport facilities is a dry factor in establishment of such facilities.

- There is a lack of trained professionals in dual/multiple disabilities in the country.

Despite all the constraints, there are a few service organizations in India. Spastics Societies are organizations exclusively set up for those with cerebral palsy in some of the major cities of India. For children with hearing and visual impairment few facilities are being developed attached to organization for the deaf, blind or for mental retardation. Sense International India is an organization working exclusively for deaf blindness and promotes growth of organizations for persons with sensory impairments.

Community based rehabilitation programmes and home-based training are also found as practical awareness for training these persons with multiple disabilities.

Another viable model can be admitting children with multiple disabilities in schools for children with single disabilities and training the teachers through in-service programmes so that they are competent to manage such children in their classrooms.

1.4.4 Curricular content

The curricular content of a child with mental retardation and low motor disabilities should focus on positioning, mobility, effective use of hands and legs for functional

activities leading to independence in daily living skills, communication socialization and if he has potentials, functional academics. Many a time, even without learning academics a child may learn vocational skills, which are routine and repetitive. This must be included at the prevocational level of the curricular programme. Adapted materials can be used if needed, for teaching.

For children with mental retardation and sensory impairment, mobility, communication, independence in daily living skills and social skills must be included in the curriculum. Body awareness is an essential component for all children in their curriculum. If the children are capable of learning functional academics such as time money and measurements, they can be taught using adapted materials.

Adaptations have to be child specific. Whether sensory or motor difficulty, the aim of the curriculum should be to lead the child towards independent living. Given below are some simple adaptations for daily living skills. The teacher needs to be innovative and creative in developing adoption, keeping in mind the child's functional level, need and the abilities.

1.4.5 Teaching strategies

Teaching strategies are the same for children with single or multiple disabilities. Use of tactile sense and appropriate aids are essential for multiply disabled children.

Aids can be of 2 types – 1-learning aids, 2. Functional aids. Learning aids are used during learning (such as blocks for counting) and are not required once a task is learnt. Functional aids are required to perform a function such as hearing aid or wheel chair. The teacher must use her wisdom in deciding when a child needs what kind of aids.

Table 3 Examples of activities for a sensory stimulation programme.

Sense stimulated	Suggested activities
Vision	1. Have student walk along or trace taped patterns on the floor
	2. Have student track moving objects of differing sizes and colours
	3. Have student move through obstacle courses of increasing difficulty
	4. Using a mirror, identify body parts, and imitate body movement
	5. Sort and match brightly coloured objects or designs with varying degrees of contrast
	6. Hold favourite objects within reach and encourage movement and grasping.
Hearing	1. Tap rhythms and solicit imitation of sounds
	2. Place ring on a stick in response to specific sounds (with severe motor involvement, student can blink eyes)
	3. Encourage manipulation of objects that elicit pleasurable sounds (bell, musical toys, etc.)
	4. Hide toy or noisemaker, which continues to emit sounds. Have students search for the object
	5. Musical games (Simon Says, musical chairs, etc.)
	6. Imitate child's vocalizations and see if child imitates you.
Touch	1. Sort and match common textures (fabric, sandpaper, etc.)
	2. Rub child with textures that feel pleasant; later, use this approach to teach naming of body parts.
	3. Have students feel objects of different temperatures (warm water, ice cubes, etc.)
	4. Encourage students to feel the faces of parents and explore their own bodies (Donlon & Burton, 1976). Attach verbal or nonverbal labels to the activities.
	5. Distinguish shapes tactually with form-boards or simple puzzles.
	6. Let the student experience the terrain barefooted.
Smell	1. Encourage experiencing different smells around the home.

2. Expose child to characteristic smells.

3. Provide community experiences. Smells of the supermarket, shoe store, and restaurants are important sources of discrimination and learning opportunities.

Taste

1. Experiment with various foods

2. Pair pleasant tastes with jobs well done

3. Associate pleasant tastes with their referents. Either vocalize or sign their names.

1.5   MULTI SENSORY APPROACHES

1.5.1   Multi sensory approaches refer to use of more than two senses (hearing and vision which are generally used for learning) for teaching a learner. As all sensory channels including (vision, hearing, smell, taste and touch) receive information and as each sensory channel has a distinct role in receiving the stimuli in the environment, it is very essential that they are used effectively. After vision and hearing, it is the tactile/kinesthetic sense that is used predominantly in the learning process.

1.5.2   Historic perspectives: Looking back at the history of training for persons with retardation, we find that Itard used multi-sensory approach to train 'Victor the wild boy of Averyon'. (Refer SESM 1, Block 1, Unit 1).

In the 19th century, Madam Maria Montessori developed a programme of activities utilizing various sensorial channels for training. Even today, Madam Montessori's multi-sensory approach is in use and has tremendous impact on the educational system, not only special educators, but also the general educators for non-disabled children.

Though various cognitive and behavioural approaches emerged with the advances in special education, the use of multi sensory approach is found to be best suited for persons with profound mental retardation. This can be attributed to the simple fact that because such children have sensory deprivation, use of other senses help in compensating for the loss thus enhancing learning.

1.5.3   Application of multi-sensory approaches for children with profound and multiple disabilities

Smith, Patton and Ittenbeach (1994) describe unique characteristics that require special consideration in such children as 1. communicative, 2 motoric, 3. Medical and 4. Behavioural. All of these four require multi-sensorial training.

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Communication, for instance does not involve just speech and hearing. Gestural communication is very much an effective mode where a child does not speak or hear. This involves tactile kinesthetic sense (Refer SESM02 Block 3 Unit 3).

Similarly to improve the motor skills in such children, physio occupational therapies and activities are included in the curriculum along with assertive devices, which provide multi-sensorial involvement.

With the advances in technology the children with multiple disabilities and profound retardation have devices that help compensate for their limitations. Computerized wheel chair, head gears for holding pencils, telephones with visual indicators, talking books for the blind are but some examples for using multi-sensory approach in the technologically advanced era.

1.6 CURRENT TRENDS IN THE EDUCATION OF CHILDREN WITH PROFOUND AND MULTIPLE DISABILITIES

1.6.1 Concept of zero reject

The People with Disabilities Act (1995) in India and the legal provisions in many countries (PL 94-142 in USA for instance) in essence advocate that all children must have access to education. This means no child for whatever reason should be rejected from the educational system. If such a `zero reject' policy should be achieved children with profound and multiple disabilities must receive `appropriate education'. As we have seen earlier, appropriate curricular content to these children include independence in daily living activities, mobility in the known environment, functional communication and if possible academics. As many of such children are non-ambulatory, ideally appropriate education should reach them, rather than expecting them to reach schools. This means alternative educational provision in terms of home-based training should be provided to them.

1.6.2 Home based training and parental involvement

As the training components are predominantly involving self help areas, parents and family members have to essentially become the trainers of such children. Involvement of parents, siblings and grand parents if possible has proved very effective in home training. In addition when the training is provided at home transfer of training is minimized as the child learns in the natural environment (Refer to SESM 1 Block 3 Unit 3 for more information on family interaction).

1.6.3 Teacher preparation

Many of the training programmes for special teachers focus on single disability. Among the programmes offered for training of children with mental retardation, coverage of profound mental retardation is very limited. Thus the teachers do not feel confident and competent in training children with profound and multiple disabilities.

In addition, as mentioned earlier, the condition of such children need intervention by a team of experts including medical professionals therapists and teachers. This demands that the teacher has competencies in being a team member to coordinate the inter disciplinary team.

In the given situation it is essential that teachers of children with single disability be provided competency through in-service training programmes in the management of profound and multiple disabilities. The curriculum should include competencies in team management; training strategies, home based and center based training and classroom management wherever appropriate. For future programmes the pre-service programmes for special teachers should provide adequate training in theory and application for management of children with profound and multiple disabilities.

1.6.4   Use of analysis of biobehavioural states for training.

Children with profound and multiple disabilities many-a-time will be found seemingly oblivious to their environment. Yet, they do experience certain sensory input and respond perhaps in their own manner. This interaction can be made more meaningful when the biobehavioural states of the child is studied. Extensive research has been done in these lines by Guess et al at Kansas University. The underlying assumptions are that the alertness in a person ranges from sleep stage through alert-awake-active stage, including 3 to 5 stages in between, such as sleep inactive, sleep active, drowsy, daze, awake inactive awake alert, and agitated and crying. The team led by Dr.Guess has analyzed the biobehavioural stages very systematically under various circumstances indulging the time of the day, position of the child place of interaction, personal material of interaction and so on which helps in arriving at the best condition under which the child is awake-alert. This situation is chosen for instructional input, as there is more likelihood of the child receiving the stimuli thus enhancing learning. This sounds logical and needs to be studied further. In short, a good teacher will find ways of reaching her student rather than giving up on the effort.

1.7   UNIT SUMMARY

Children with profound and multiple disabilities from a small number in the total incidence of mental retardation.   Defining the population is difficult as the

disabilities overlap, or are found in varied combinations. Many persons with profound retardation have associated other conditions and disabilities.

This group of children have significant difficulty in communication, performing daily living activities, many have limited ability to move around and have to be looked after through out their lives.

The educational provisions predominantly home based training focus on empowering family members. Many schools do not admit them. Schools for children with single disabilities do not have facilities and competencies in admitting children with multiple disabilities. These children need one to one attention and multi-sensory input. Technological advances and research in analysis of biobehavioural states have shown s silver lining in the education of such children.

1.8   CHECK YOUR PROGRESS

Tick the right answer.

(A)   Among those with mental retardation children with profound mental retardation constitute

   (a)   A large number

   (b)   One third of total

   (c)   Very small number

   (d)   Third of total

(B)   Multiple disabilities include

   (a)   Mental Retardation + Visual Impairment

   (b)   Hearing Impairment + Visual Impairment

   (c)   Mental Retardation + Locomotors disability

   (d)   All the above

(C)   (a)   Children with profound mental retardation are taught academics on Priority

                                                                    True/False

   (b)   Communication, mobility and independent living skills form the basic curricular areas for children with multiple disabilities

                                                                    True/False

   (c)   Home based training is ideal for profound and multiply disabled children

                                                                    True/False

(d)   `Zero reject' means reject children with profound retardation for schools

True/False

(D)   Write briefly the suitable teaching strategies for profoundly retarded children.

1.9   ASSIGNMENT/ACTIVITIES

(1)   Collect and compile details with illustrations of assertive devices available for children with profound mental retardation and multiple disabilities.

(2)   Write a programme for home-based training on feeding for a child with profound mental retardation living in a rural area.

1.10   POINTS FOR DISCUSSION / CLARIFICATION

After going through the unit, you may like to have further discussion on some points and clarifications on others. Note down those points below:

1.10.1   Points for Discussion

_____

_____

_____

_____

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_____

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1.10.2   Points for Clarification

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UNIT 2: EARLY CHILDHOOD EDUCATION CURRICULAR DOMAINS – ENHANCEMENT OF DOMAIN IN MOTOR, PERSONAL, COGNITIVE AND COMMUNICATION AREAS

STRUCTURE

- o Introduction
- o Objectives
- o Growth and Development
    - Laws/Principles of Development
- o Areas of Development
    - Motor Development
    - Language Development
    - Cognitive Development
    - Emotional Development
    - Social Development
    - Play Development
- o Application of developmental perspective to mental retardation
- o Unit Summary: Things to remember
- o Ethical considerations
- o Check your progress
- o Assignment/Activity
- o Points of discussion/ clarification
- o References/Further readings

2.1   INTRODUCTION

Development marks the various milestones in the life span of a human being.   The development actually starts from conception onwards. Development is a continuous process in prenatal, natal and post natal stages of a person. Generally people regard the event prior to the birth as unimportant. But the environment in which a child grows before birth also has tremendous influence on later development for physical and psychological functions.

Belief in traditional practices had more importance for child rearing in the olden days. However, with the advancement of science, the understanding of the development of a child has achieved progress. The field of child development studies the process and pattern of the development in children. Thus, the objectives of the study of the development of a child involves the following:

The changes in appearance, behaviour, interest and goals from one development period to another;

The age when these changes occur;

The environmental conditions under which the developmental change occurs;

The influence of developmental changes on behaviour of children, and predictability of changes and characteristics of developmental changes.

2.2   OBJECTIVES

On studying this unit you will be able to,

- define growth and development

- narrate laws and principles of development

- describe areas of development namely physical, social, play, emotional, cognitive and language development and effect of delay in development in mental retardation.

2.3 GROWTH AND DEVELOPMENT

Often, the term development is synonymously used with that of growth, though, both the terms are different in connotation. Growth and development mark the changes that take place in an individual from conception to old age. The term 'growth' refers to 'quantitative' changes, that is, increase in size and structure. Development may be defined as a progressive series of orderly, and coherent changes. Development signifies that the changes are directional and that they lead forward rather than backward. The term 'development' refers to 'qualitative' and 'quantitative' changes. There is a definite relationship between the changes taking place and those which preceded or will follow them.

Conception occurs when a sperm from a male penetrates the cell wall of an ovum or egg of the female. The fertilized ovum called a 'zygote' contains 23 pairs of chromosomes, all of which contain the information which will describe the new individual. The zygote begins to grow and subdivide through the process of mitosis and mark the beginning of 'development'. The time from the sperm's penetration of the ovum to the development of the first two cells usually is between 24 to 36 hours. The time from conception to birth is usually divided into three phases. The first phase called the 'period of the ovum' which starts from fertilization until implantation. The second phase from 1 to 8 weeks is called the period of the 'embryo'. The period is characterized by cell differentiation as all the major organs begin to develop. The last phase from 8 weeks until delivery (normally around 40 weeks) is called the period of the "foetus".

2.3.1 Laws / Principles of Development

Careful observation of the quantitative and the qualitative changes that takes place in the process of development shows certain common factors. These are known as Laws or Principles of Development:

i.   **Development involves changes**

Development involves changes in size and proportions. There is disappearance of old features and acquisition of new features. The child develops both physically and mentally.

ii. **Early development is critical for later development**

Formative years are considered as crucial period of life because early foundations tend to persist and influence the individual's attitudes and behaviour throughout life.

iii. **Development is the product of maturation and learning**

Development results from the interaction of hereditary and environmental factors. Probably, heredity sets the limits and stimulating environment is essential for full expression of the genetic potentials.

iv. **The developmental pattern is predictable**

Development follows a predictable pattern in both prenatal and post natal life. Development has two laws of developmental direction:

a) Development follows the "cephalocaudal law" (cephalo – head, caudal – tail), that is, development spreads over the body from head to foot. This means that development in structure and functions come first in the head region, then in the trunk and last in the leg region.

b) Development follows the "proximodistal law", -from near to far – that is, development proceeds from the central axis of the body towards the extremities. For example, children can use their arms before their hands and can use their hands before the use of fingers.

v. **The development pattern has specific characteristics**

The important characteristics of child development are as follows:

a) There is similarity in the development of all children.

b) Development proceeds from general to specific responses.

c) Development is continuous.

d) Different areas develop at different rates.

e) There is correlation of development with growth.

vi. **There are individual differences in development**

Individual differences are found in both physical and psychological development. The practical significance of knowledge of individual differences in development is that it emphasizes the importance of training children according to their individual needs.

vii. **There are periods in the developmental pattern**

The important developmental periods are prenatal period, infancy, babyhood, early childhood, late childhood and puberty. There are times of equilibrium and disequilibrium during these periods.

viii. **There are developmental tasks to be reached for every developmental period**

The developmental tasks enable parents and teachers to know at what ages children are capable of mastering different patterns of development.

ix. **Every area of development has potential hazards**

At every age there are likely to be hazards in some area that interfere with the normal development of children, for instance, physical or psychological hazards can alter or arrest the pattern of development.

x. **Happiness varies at different stages in the developmental period**

In general the first year of life is usually the happiest and puberty is the unhappiest period. There are 3 'A's of happiness during childhood namely; Acceptance, Affection, Achievement. Early childhood happiness has a profound effect of children's later adjustment and success in life.

2.4 AREAS OF DEVELOPMENT

Though the growth and development of a child is an overall simultaneous and continuous process, for the purpose of better understanding, some important areas have been identified. Mentally retarded children have delay or limited development in all these areas. Proper understanding of normal development will help a teacher to understand its implications when there is a delay or deviation. The following pages describe the normal development in the following areas.

- Motor Development,
- Language Development,
- Cognitive Development,
- Emotional Development,
- Social Development
- Play Development.

2.4.1 Motor development

It is important to know how children develop physically because physical development influences children's behaviour directly by determining what

they can do and indirectly their attitudes towards self and others. Physical development involves changes in body size and body proportions which is measured in terms of height and weight. The physical development involves growth of bones, fat muscle, teeth, puberty changes of primary and secondary characteristics and neurological development.

Motor development means the development of control over bodily movements through nerves and muscles. As one grows, the child develops gross motor movements, which involves large muscles area such as sitting, standing, walking, jumping, etc. Subsequently the child acquires fine movements which involve relatively small group of muscles such as those required for holding the objects, putting the thread in the needle etc. The development of control over motor movements keeps the child in good health, helps in the adjustment with the environment and gives the child sense of physical security and independence.

Principles of motor development

Careful observation of infants and growing children has given definite clues regarding the motor development of children. The development of motor movement follows some principles as follows seen below:

i.   Motor development depends on neural and muscular maturation

At birth the lower centers of nervous system are more developed than the higher center that is, the brain. Thus the child has only reflex behaviours, as these are controlled by the centers in spinal cord. The fine coordination and skilled movements are controlled by the centers in the cerebellum and the frontal lobe. Skilled movements cannot be mastered until the muscular mechanism of the child is developed.

ii.   Learning of skills cannot occur until the child is maturationally ready

Trying to teach the child skills for which he is not maturationally ready will be a waste of effort. With intensive training, temporary gains could be achieved but not lasting ones.

iii.   Motor development follows predictable patterns

As the development is based on the cephalo-caudal and proximo-distal laws, the child initially gets the control of eye movements and neck control before other areas. Like wise the area in the central axis like turning to the sides and sitting are achieved earlier than the

use of arms, hands and fingers. Once these are achieved the child learns use of legs and feet.

iv.   It is possible to establish the norms for motor development

Norms can be developed for the motor development by calculating the average age at which the child starts sitting, standing, walking, jumping, picking objects etc. By observing this, it is possible to establish whether a particular child's development is at par with his/her age or delayed in development or going faster compared to her age.

v.   There are Individual differences in development

Intellectual level, foetus movements, nutritious diet, labour pain, premature birth, physical disability, over protection by parents, opportunities to learn, etc. can alter the rate of motor development.

Sequence of motor development		
* Social Smiles (in response to mother's smile)	:	3 months
* Thumb sucking	:	1 month
* Holding the head up:		
- In prone position	:	1 month
- In a supine position		4 months
* Turning :		
- From side to back	:	2 months
- From back to side	:	4 months
- Complete	:	6 months
* Sitting :		
- Pulls to sitting position		
- With support		5 months
- Without support		9 months
* Elimination :		
- Bowel control		2 years
- Bladder control		2 to 4 years
* Reach and Grasp	:	4 months

* Grasp and hold	:	5 months
* Standing with support	:	8 months
* Standing without support	:	11 months
* Walking with support	:	11 months
* Walking without support	:	12 months

Hazards in motor development

i. *Delayed motor development*: The prenatal, peri-natal and postnatal factors may contribute to the delayed development of motor movements.

ii. *Unrealistic expectation*: Every child has his own limits. If parents, teachers or child himself expects more than what he really is, it leads to the failure in performance of the task. The repeated failure in turn may lead to the development of a feeling of inadequacy. The child, then may not try even for the tasks which he can perform.

iii. *Failure to learn important skills*: If the child fails to learn important skills then it causes many problems in the social adjustment of the child.

2.4.2 Language development

Language involves receptive and expressive forms when receptive language ability is limited expressive language 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.

i. Building vocabulary,

ii. Learning to pronounce words,

iii. 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,

i. Crying,

ii. Gestures,

iii.   Babbling, and

iv.   Emotional expressions.

Speech can be learned by (a) trial and error, (b) imitation and (3) training or teaching.

There are 6 essential factors in learning to speak :

i.   Mental readiness,

ii.   Physical readiness,

iii.   Good model to imitate,

iv.   Opportunities to practice,

v.   Motivation, and

vi.   Guidance.

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

Factors associated with language development

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

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

iii.   *Family*: A healthy, stimulating and rewarding environment facilitates language development.

Refer to SESM 02 Block 3 Unit 3 on Speech and Language for more details on the developmental aspects and effect on mental retardation.

2.4.3 Cognitive development

Cognition refers to the mental activities involved in acquisition, processing, organization, storage and use of information. These activities include perceiving, imagining, reasoning and judging.

A single and global measure of an individual's general level of cognitive development is called intelligence. The neuron patterns in the brain are the determining factors of intellectual development.   Mental growth is the

process of organization of behaviour patterning which brings the individual to a stage of psychological maturity.

The observational studies on children's intellectual development by Jean Piaget, (1896-1980) a Swiss psychologist, is considered as an important landmark in this area. Piaget's theory covers the entire range of ages from infancy through adolescence. It proposes that children at different ages think and learn in different ways. Piaget's theory on intellectual development is based on the following assumption:

i.   Cognitive development occurs as a result of active and voluntary exploration by the child. Child's interaction with the environment is an essential requirement for cognitive development.

ii.   Piaget's theory is a stage theory. There are important qualitative changes between stages rather than just quantitative differences between ages.

iii. There are connections between successive stages of development. Each stage of cognitive development is dependent on the competence achieved in the previous stages.

According to Piaget, basic to all intellectual development are certain processes that form the matrix of cognitive changes. They are:

i.   Assimilation,

ii.   Accommodation, and

iii. Equilibrium.

Assimilation and accommodation are the processes by which information is taken in and subsequently it changes the mental structures ('Schemata') in the course of development. Equilibrium results from a fundamental motive to 'stay' in the course of development. Schemata changes from one stage to another. Based on this basic intellectual development, Piaget identified four developmental stages of intelligence:

i.   The sensory motor stage,

ii.   The pre-operational stage,

iii. The concrete operational stage, and

iv.   The formal operational stage.

i.   The sensory motor stage :- (0 to 2 years)

During infancy, the cognition is primarily based on sensations and motor actions than thought. The new born's behaviour is mostly reflexive in nature (sucking, grasping etc.). The initial nonpurposive acts of the infant gradually develops to co-ordinated and purposive acts. The term 'sensory motor' describes that, infants first begin to learn through sensory observation and they gain control of their motor functions through activity, exploration and manipulation of the environment. In the beginning stage, an infant acquires knowledge through their actions on the object. like, by pushing a toy and seeing its movement, a mental representation called 'Sensory Motor Schema' develops. This sensory motor scherna help the infant in its further similar kind of activities to achieve the goals. In the later phase of this stage, the infant achieves what Piaget called as 'object permanence' or 'object constancy' (an infant's ability to recognise that, objects continue to exist when hidden from view). For example, the child looks for a toy even if it is obstructed by a. screen. A child who has not achieved this stage will not look for the toy which is hidden. This object prominence concept develops between four to ten months of age.

ii.   Pre-operational stage :- (2 to 7 years)

This stage is called pre-operational stage because of the child's inability to perform operations or mental transformation - a period where basic requirements for operational logic are growing. During pre-operational stage, an infant uses symbols and language more extensively, compared to the sensory motor stage. The manipulations of symbols are marked by delayed imitation of people and events. Even if an act is performed a day before, the child is able to imitate it. A toy may be used as a symbol of father, mother animal etc., which forms the basics for higher levels of problem solving at a later stage. During this stage, the children are 'egocentric'. They consider themselves as the center of the universe. They have a limited point of view, as they cannot take the role of another person. At this stage, children are unable to modify their behaviour for someone else.

iii.   Concrete operational stage : (7 to 11 years)

During this period children operate and act on the concrete, real and perceivable world and events. Their egocentric thought is replaced by 'operational thought', which enables them to attend and deal with various kinds of information. Piaget called this as the ability of 'decentering'. The

operational thinking process helps the children to view things from someone else's perspective. Children at this stage also start understanding the basic logical rules (what Piaget calls 'groupings').

Simultaneously, the child is capable of understanding the objects from different dimensions. Conservation is another ability, which explain that even if certain dimensions of the objects change (example, shape, size) the object may still remain the same in some other dimension (like, volume, quantity or weight). For example - the quantity of a glass of water remains the same in volume after pouring it into a flat plate. Similarly, objects (say, marbles) kept in a line or assembled together may still remain the same in number.

'Reversibility' is another ability attained by children at this stage. It is the capacity to understand the relation between two things, to understand that one thing can turn to another and back again, like, ice and water. Higher stages of these functions are observed in the formal operational stage.

iv. The formal operational stage: (11 - 15 years)

Formal operational stage is the apex stage of intellectual development. Attainment of this level of competence presupposes acquisition of the previous stages of cognitive development. It is characterised by the adolescent's ability to think 'abstractly', to reason 'deductively' and to define 'concepts'. The thinking process of the person is in a formal, logical, systematic and symbolic manner. One can think in terms of multiple causation of events (meaning, different causes may lead to the same effect). According to Piaget, not all adolescents enter the stage of formal operations at the same time or in the same degree. Some may not enter the stage of formal operational thought at all thereby remaining in the concrete or other lower, mode throughout life.

2.4.4 Emotional development

Emotions are the aroused state of the organism involving conscious, visceral and behavioural changes. It is more intense than simple feelings and involve the organism as a whole (feelings are conscious experiences activated either by external stimuli or by various bodily states, example, the pleasant feeling of smelling a flower). Emotional state is a complex reaction involving, a high level of activation and visceral changes accompanied by strong feelings or affective states. Emotions are under the control of the autonomic system which is relatively independent of the voluntary control. All emotions play an important role in the life of children. Every child is born with potentialities for both pleasant and unpleasant emotions.

Even infants have the ability to respond emotionally. The first sign of emotional behaviour in the new born infant's 'general excitement' due to intense stimulation. However, the emotional status of the infant in the next few months is not very clear-cut and appears to be diffused. With age, emotional responses become less diffused and random. For example, at first, the child expresses displeasure by screaming/crying but later his reactions include resisting, throwing objects, stiffening of the body etc. As the child becomes older linguistic responses increase and child's motor responses decrease especially in fear and anger.

Factors affecting the development of emotions

i.   Maturation and learning - Frontal lobe is responsible for matured emotional behaviour. Development of endocrine glands is like-wise essential to the development of a mature level of emotional behaviour. Children learn the expression of emotions by imitation. Some emotional reactions are acquired by pairing with unconditioned stimulus and conditioned stimulus.

ii.   Intelligence - Intellectual development helps the child to perceive the stimulus and respond to it accordingly. As development of intelligence occurs the child differentiates between different intensities of stimulus and expresses his emotionality likewise.

iii.   Age - As the child grows older he expresses his emotions differently. Younger children when they are angry even on a trivial matter tend to be physically assaultive while the grown up persons manage it by verbal expression of anger only.

iv.   Sex - It is observed that some emotions like anger, are more frequently and intensively expressed by males than females.

v.   Culture - There are variations in the expression of emotions in different culture.

Characteristics of childhood emotions

Individual differences are common because of differences in maturational level and learning opportunities. However there are certain characteristic features of children's emotions.

i.   Children's emotions last only for a brief period.

ii.   Mostly, emotions are expressed in intense manner. The child reacts very strongly to even minor emotional situations.

iii.   Children's emotions are transitory. The child shifts emotions from one type to another very quickly, that is, for example, from smile to anger.

iv.   Children's expression of emotion vary in nature. For example, one child will go out of the room when he is afraid, another will   hide behind his mother and another may stand and cry.

v.   Emotion can be identified from the behaviour. They express their emotions so overtly that it is easy to know whether a child is angry, afraid or happy.

The Common Emotional Patterns of Childhood are :		
Birth	:	Pleasure, surprise, disgust, distress (general excitement).
6 - 8 Weeks	:	joy.
3 - 4 Months	:	anger.
8 - 9 Months	:	sadness, fear.
12 - 18 Months	:	tender affection, shame (begins at 18 months)
24 Months	:	pride.
3 - 4 Years	:	guilt, envy.
5 - 6 Years	:	insecurity, humility, confidence.

Fear and anger are mostly predominant emotions during childhood. Emotional control should be learned in order to achieve emotional balance.

2.4.5 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'. Socialization is largely determined by child's cognitive development as well as social stimulation available to the child.

Social development during infancy

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 for example, becomes meaningful because it is associated with gratification of child's needs. A three month old infant therefore expresses 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 month 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, neighbourhood, school and finally the community. The experiences he has since birth through the stages are responsible for his values, beliefs and attitudes as an adult.

Erik Erikson, a psychoanalyst, 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 1 1 years).

Stage 5. Identity versus role diffusion (1 1 years through end of adolescence).

Stage 6. Intimacy versus isolation (21 to 40 years).

Stage 7. Generativity 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 on to the next stage.

The ages of 6 to 8 are years when the child's social environment expands rapidly. The life of the child begins to center 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 begin 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 models (mothers, fathers, 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 realizes that adults can make mistakes, that they do not know everything, and that they can be criticized. 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 at an earlier age. Clashes may result, overtly or covertly.

2.4.6 Play development

'Play' means any activity engaged in for the enjoyment it gives without considering of the end result. There are two kinds of play activities: namely active play and passive play.

Active play : In active play, the, enjoyment comes from what the individual does, whether it is running just for the fun of running or constructing something with plastics or clay.

Passive play : In passive play the enjoyment is derived from the activities of others. Common examples are looking at pictures, listening to music or radio, watching T.V. and going to movies.

Four important characteristics of play have been described as follows:

i. Play is intrinsically motivated, that is, children initiate play for the sake of play only.

ii. Play is spontaneous and voluntary which is undertaken by choice rather than by compulsion.

iii. Majority of children engaged in play have active involvement and few may have passive involvement.

iv. Play gives enjoyment.

According to the development in the cognitive, linguistic and social sphere, the nature and type of play changes. Jean Piaget, has divided play into three categories, a) sensory motor play involving repetition of a motor activity - patting, or shaking an object again, b) symbolic play - pretending or including an absent object in one's play, c) play with rules by cooperating with others. Some characteristic factors in the development of play are as follows:

i. Exploratory play: Mouthing of a toy (licking and chewing), shaking and hitting of a toy, examining a toy by turning it to different sides, dropping it, throwing, and feeling it, rubbing of a toy.

ii. Relational play: In this stage the child is capable of playing with two or more objects by establishing a relationship with them like keeping a doll and a ball on top of a toy jeep. At a later stage the child plays by relating objects according to its use like grouping spoon, plate and glass together.

iii. Differentiated play: This is the third stage of play in the, developmental phase. This stage is classified into three areas: a) skillful play like precision grasping, keeping a block in its slot,   b) pretend play - pretend to go to sleep by closing eyes and   c) puzzle play like solving picture puzzles or arranging objects on the basis of shape and size.

The development of play in the first three years of life is observed as follows:

i. Presymbolic play: In the first two months the child receives more of visual stimuli which shows high rate of changes. Slowly, the child differentiates objects based on the colour, shape   and size. By seven months, the child is able to change from stereotypical play   (playing with the objects in the same way irrespective of the function of the object) to functional play. By

twelve months the child's interest shifts to objects which responds to their manipulation like pressing a button which make a sound.

ii.   Emergence of a symbolic play: The play during this stage shows the increase in flexibility of the child's thought process. The child shows symbolic representation in the play during this stage. These symbolic play or pretend gestures occur between 12 to 18 months. The child tends to play with more objects than single object.

iii.   Elaboration of Symbolic Play: During this stage, the pretended gestures with the symbolic objects shift to a higher level. The child becomes capable of using imaginary objects, to symbolise absent objects. like, in the absence of a doll, the child pretends that the doll is in her hand (empty) and swings and rocks the doll, in the hand to make it sleep. This ability of the elaboration of symbolic play emerges between 18 to 42 months.

You will find many of these abilities absent or limited in a child with mental retardation

GUIDELINES FOR PARENTS TO ENCOURAGE PLAY

Play is essential not only for healthy normal children but also for children with disabilities. They may have limited range of play and therefore, it may be necessary for the parents and family members to encourage and initiate play. Some guidelines for parents and family in this regard are as follows:

i.   Play must be at the right level. It is necessary that play or the toys chosen must be appropriate to the age level of the child.

ii.   Small steps - play must be broken in to small steps and the difficulty level be increased only after the child has successfully performed the activity at lower levels. Before moving to another level, the child must get adequate opportunities to play each game over and over again. However, care must be taken that the child enjoys the game.

iii.   Model the child's play - Parents may initiate play activity and the child may join the play.

iv.   Do not spoil the game; a child should not be forced to play a game. He/she, must play voluntarily in order to enjoy the game.

v.   Setting the scene: A child may lose interest in playing with the same toy. Therefore, it may be appropriate to show the child other toys and objects. Allow the child to show interest and choose the play he likes.

vi.   Playing alone: It is not necessary for the parents to be always playing with the child. As the child grows he will be able to keep himself occupied. Therefore, child must be given an opportunity to play alone.

vii. Special toys: Some toys may be kept for special occasions only. If the child tries to break them or throw them away, the special toys should be put away. Once the child has learnt to play with these toys properly, these can be given for regular play a few at a time. It may not be possible for the child to concentrate on one object or game or play for long. Therefore, it will be necessary to introduce new games or play which can be played for few minutes at a time. This way the child will look forward to the next session.

APPLICATION OF DEVELOPMENTAL PERSPECTIVES TO MENTAL RETARDATION

Nature and nurture in development: Nature refers to innate or inborn processes that influence behaviour while nurture refers to learning, and in general with the effect of the environment on behaviour. The nature – nurture - concept really, concerns the relative impact on heredity and environment. The contribution of nature and nurture in the development of a person and his, behaviour has been a topic of debate. 'How much of an individual's intelligence is determined by environmental factors and how much of it is already decided by a persons genetic make-up'. This is again one of the oldest debates in the fields of education and psychology. Authorities now agree that the question is not one of "either/or". Psychologists today confirm that development is shaped by the interaction of heredity and environment. Heredity may set the limit that one may reach in intellectual capacity but the environment determines how close one comes to achieving this potential.

Studies with human beings are not easy to conduct or interpret. Many case reports give evidence on the importance of the environment in human development. Environmental stimulation on stimulus deprived infants have shown promising results. Behavioural scientists like J.B. Watson, Mary Cover Jones and Joseph Wolpe have further established the effect of environmental manipulation on the behaviour of individuals. Behaviour modification techniques for skill deficits and undesirable behaviour are again contributory factors for the 'nurture' theory. The relatively recent contribution to this concept is the Early Intervention programme which provides intense stimulation to the new born infants and children up to the age of 5 - 6 years.

Application of developmental perspectives to mental retardation

Knowledge of the developmental process is of great help to the researcher and others working in this field. It provides them with a complete understanding of the developmental characteristics of children in different areas of functioning. The practical implications are two fold:

i. Early identification

Observational studies and psychometric evaluation (assessment using psychological tests etc.) based on laws of development help the professionals to detect the level of severity of retardation in given area of functioning.

ii.   Intervention

Knowledge of the developmental process is helpful in planning a systematic and age appropriate program for retarded individual. Results of a psychological evaluation will serve as an important guideline for planning the direction and goals of the training program. A training program to help a child acquire skills will be of little use if the organ and body parts of the child is not mature enough to function. Regardless of how much stimulation he receives the child will not be able to learn until he is developmentally ready to do so. The necessary physical and mental base must be present before new abilities can be built on them.

2.6   UNIT SUMMARY

- Development: Progressive, orderly and coherent changes in organization of behaviour over a period of time.

- Growth: Particularly biological and quantitative changes over a period time.

- Prenatal development: The development of an individual from conception until birth.

- Important Concepts in development

  a)   Development involves changes.

  b)   Early development is more critical than later development.

  c)   Development is the product of maturation and learning.

  d)   The developmental pattern is predictable.

  e)   The developmental pattern has specific characteristics.

  f)   Individual differences exists in development.

  g)   There are periods in the developmental pattern.

  h)   There are developmental tasks to be reached for every developmental period.

  i)   Every area of development has potential hazards.

- Laws of Development include laws of directionality, behavioural model, transitional model, pattern of development process and critical periods.

- Important areas of development are motor development, language development, cognitive development, emotional development, social development and play development.
- Application of Development with respect to Mental Retardation involve identification and intervention.

2.7 ETHICAL CONSIDERATIONS

The study of Psychology helps to understand the behaviour in a systematic and scientific manner. The subject matter of psychology studies all the functions related to central nervous system like thinking, feeling, planning, judging etc. It also gives an insight into the development and function of personality, motivation, learning, perception etc. These vast knowledge obtained through the research methods can be easily mis-utilised by a student for personal benefits. But it is expected that the knowledge gained through the study of Psychology on the behaviour of human being is used for improving their general welfare. Lack of experience, misinterpretation and overconfidence in the assessment and its interpretation can damage the purpose for which it was developed. On many occasions, the teachers may have to interact closely with others. These interactions have to be in the boundary of professional relationship. Empathy is the quality required for understanding others. The rapport established for the working relationship should never encroach into the emotional level. Confidentiality on the information revealed by the clients like the mentally retarded children and their parents need to be maintained. Without the consent of client or his guardian, no information on the client be passed on to others.

Behaviour Modification, especially, the punishment techniques used for the problematic behaviours has the chance to be critically analysed as an inhuman/cruel approach to the children whose intellectual capacity is minimal; Here, the guidelines given at each stage, right from the identification of the behaviour as the problem behaviour need to be followed rigidly. The teachers should be able to explain each and every activity that they plan and implement with the mentally retarded Child. The use of aversive control techniques require responsible, professional judgment. The teacher must be quite certain that the target behaviour actually requires modification and that aversive control techniques are the method of choice. The guidelines offered by the American Psychological Association's *Ethical Principles in the conduct of Research with Human Participants* (1973), contains the following statements regarding the use of physically or psychologically stressful procedures:

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The ethical investigator protects participants from physical and mental discomfort, harm, and danger. If the risk of such consequences exists, the investigator is required to inform the participant of that fact, secure consent before proceeding, and take all possible measures to minimize distress. A research procedure/aversive procedure may not be used if it is likely to cause serious and lasting harm to participants.

2.8 CHECK YOUR PROGRESS

a. List the principles of development

b. List any 4 important milestones of development

c. Explain Piaget's stages of cognitive development

d. Write briefly on emotional development

e. How does social development play a role in independent functioning

2.9 ASSIGNMENT/ACTIVITY

Observe a 4 year old non-retarded child and a 4 year old retarded child. Compare their development in various areas and write a report.

2.10 POINTS FOR DISCUSSION / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification or other. Not down those points below.

2.10.1 POINTS FOR DISCUSSION

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_____

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2.10.2 POINTS FOR CLARIFICATION

2.11 REFERENCES/FURTHER READINGS

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UNIT 3: CURRICULUM DOMAINS FOR EARLY CHILDHOOD EDUCATION AND SENSORY MECHANISM

STRUCTURE

- **Introduction**
- **Objectives**
- **Adaptive Behaviour**
  - Adaptive behaviour and intelligence
  - Deficits in adaptive behaviour
  - Assessment
- **Management of Maladaptive Behaviour**
  - Classical conditioning
  - Operant conditioning
  - Reward and Punishment
- **Problem behaviour**
  - Steps in identifying problem behaviour
  - Functional analysis
  - Management
- **Differential reinforcement**
- **Unit Summary**
- **Check your progress**
- **Points for discussion / clarification**
- **Assignment/Activity**
- **References/Further Readings**

INTRODUCTION

The behaviour of living beings has always been a subject of curiosity and interest to the behavioural scientists. A behaviour is considered as an aspect of the function of an organism. This may include the explicit expression of an action, thinking, emotional expression, physiological activities etc. These functions may or may not be visible or observable for another person. Sometime the function of an organism could be due to the result of an internal activity and some time it could be the result of an external activity. Very many factors like genetic constitution, neurobiology, personality factors and environmental influences are attributed to the basic structure of a behaviour. Behaviour is that portion of the organism's interaction with its environment that is characterized by detectable displacements in space through time of some part of the organism, and that results in a measurable change in at least one aspect of the environment. This indicates that behaviour is a product of the relation between an organism and its environment. The simplest form of a behaviour has the relation between a stimulus and a response (S → R). The quality of the expressed behaviour has an influence of the intelligence of the person.

Though, the function of the behaviour is very much complicated, every individual is expected to behave in a manner, which is in tune with the accepted norms of the society or environment in which he/she lives. This expectation on the behaviour is extended to the routine life pattern of everyday activity. This necessitates the individual to adapt himself to the requirements of present day functioning. This is termed as **Adaptive Behaviour**. Adaptive Behaviour refers to the quality of everyday performance in coping with the environmental demands. It is essential to have a good deal of information on Adaptive Behaviour for the students of Behavioural Science, especially those who are dealing in the area of mental retardation. This topic on adaptive deficits is aimed at introducing the different aspects of adaptive behaviour.

3.2 OBJECTIVES

After studying this unit you will be able to

- define adaptive behaviour and maladaptive behaviour

- demonstrate understanding of maladaptive behaviour.

- narrate strategies for management of inappropriate behaviour.

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3.3   ADAPTIVE BEHAVIOUR

Definition

Adaptive behaviour is considered as the behaviour that facilitates the individual to interact more efficiently with his/her environment. An individual's environment is characterized in terms of intensity, diversity and the structure, which may be patterned, or lack intensity or it may be enriched. The adaptive behaviour mechanism helps the person to optimally adjust to the environment.

The adaptive behaviour in general refers to the way in which an individual functions in his/her social environment. The American Association on Mental Retardation (1977) defines adaptive behaviour as "the effectiveness or degree with which an individual meets the standard of personal independence and social responsibility expected of his or her age and culture group". This indicates that an individual is expected to meet the independent functional requirements and the social skills appropriate to chronological and social development.

Adaptive skills :   Adaptive skill refers to an individual's ability to cope with the demands of independent living within the community in a socially approved way. It draws upon the whole range of skills and abilities, ranging from the basic skills like washing, and toileting to more advanced skills such as managing money. Persons with mental retardation or physical disability will usually have lower levels of adaptive behaviour than others. It is the manner in which an individual deals with the cultural, social, physical and mental demands of the environment, which makes up his adaptive- ness. Some of the adaptive behaviour skills in the daily routine of an individual are, brushing, bathing, grooming, dressing, eating, personal interaction, group participation, money handling, home management, health care and community awareness.

During the initial developmental stage, normally a child is exposed to the daily practice of tooth brushing, bathing, and grooming. All these activities may start with physical prompting or modeling. However, the child, over a period of time, is expected to carry on with these activities on his own. In a normal developmental pattern, the individual is able to adapt to the situation as per the need. The deficits in adaptive behaviour are noticed when there is a delay in the mental development or due to other limitations like physical disability or   pervasive developmental disorders.

3.3.1   Adaptive behaviour and intelligence

Adaptive behaviour refers to the quality of everyday performance in coping with environmental demands. The quality of general adaptation is mediated by level of intelligence. **Intelligence is considered as the aggregate or global capacity of an**

individual to think rationally, act purposefully and to deal with the environment effectively (Wechsler, 1975). The quality of performance as expected in the adaptive abilities may appear to be overlapping with the concept of rational thinking, purposeful action and the ability to deal with the situations as described as intelligence. However, it is evident from the consideration of the definition of adaptive behaviour, with its stress on everyday coping, that adaptive behaviour refers to skills of the daily living rather than the abstract potential implied by intelligence (Grossman, 1983).

3.3.2   Deficits in adaptive functions and maladaptive behaviour

Adaptive behaviour components are reflected in various activities in the daily routine life such as caring for self at toilet, brushing (teeth), drinking from glass or cup unaided, ability to wait for turn during a play etc. All these behaviour are directly proportional to the developmental age of the individual. Persons with developmental delay or physical disability may have deficits in adaptive behaviour in different areas. Apart from the deficits in adaptive behaviour, children also exhibit maladaptive or undesirable behaviour due to many reasons. However, as and when the child grows, he learns to behave appropriately in the given situations. The consequences of maladaptive behaviour can be observed as skill deficits and undesirable or problem behaviour. Children with mental retardation show behaviours that are considered as deficits in adaptive behaviour because of the limitations in carrying out the routine activities. The problem behaviour or undesirable behaviour causes harm or inconvenience for others or to the child himself. Presence of maladaptive behaviour in children poses difficulties to the parents, teachers and other concerned.

Since, adaptive behaviour is expected to be age appropriate, the deficit in adaptive behaviour is easily identified by linking with the developmental stages:

In infancy and early childhood, the deficit may be observed in areas during the development of sensory motor skills, communication skills, self-help skills and socialization (development of abilities to interact with others).

During childhood and early adolescence, the deficits may appear in the areas mentioned above and/or in the application of basic academic skills in daily life activities, application of appropriate reasoning and judgment in mastery of the environment, and in social skills (like difficulty in participation in group activities and interpersonal relationship).

During the late adolescence and adult life, deficits may appear in all the areas mentioned above and/or in the areas of vocational, social responsibilities and performances.

A proper assessment of the child using the tools mentioned below will give details regarding the skill deficit behaviour and problem behaviour.

3.3.3 Assessment

An individual's behaviour is subjected to changes depending upon the situation - stimulations - to which he/she has to respond. Often, the behaviour which is considered as appropriate in one situation, could be totally inappropriate in another situation. For example, urination is an essential biological need. However, a child who has attained the bladder control, relieving himself in the classroom emits an inappropriate behaviour, where as the same behaviour in the toilet will be an appropriate behaviour. Persons with mental retardation are known to exhibit inappropriate behaviour due to deficits in the skill areas or because of maladjusted behaviour or problem behaviour. A proper assessment of the adaptive behaviour would determine the current level of functioning of the individual. From this, the abilities and the deficits of the individual can be determined. The reason for the deficits in adaptive behaviour (not doing the expected task) may be 1. because of the lack of experience or opportunity to carry out those particular tasks or behaviour 2.due to any physical limitation which prevents the performance of those behaviour 3.due to lack of motivation or 4. because of specific cultural patterns or experiences. Undesirable or problem behaviour occurs due to various reasons which include adaptive deficits also

The popular tools which are being used to assess the adaptive behaviour are:

1. **The Adaptive Behaviour Scale (ABS)** – This scale, developed in 1969 by Nihira et. al has undergone a number of revisions. ABS is used for individual program planning and assessing the total programming needs of groups of clients for research purposes. It is widely used for assessing the persons with mental retardation and emotional maladjustment of all ages - childhood/adulthood. ABS has two parts. Part-I has matters described as adaptive behaviour comprising 10 domains with a total of 66 items. The domains are independent functioning, physical development, number and time, domestic activity, vocational activity,, self direction, responsibility, and socialization. Part II of the scale measures the maladaptive behaviours which is grouped into 14 domains. They include violent and destructive behaviour, untrustworthy behaviour, withdrawal, stereotyped behaviour, inappropriate interpersonal manners, unacceptable vocal habits, unacceptable or eccentric habits, self abusive behaviour, hyperactive tendencies, sexually aberrant behaviour, psychological disturbances and use of medication. ABS is used by a person who knows the individual being

assessed. The assessor records responses to the item on the questionnaire, and no special training is necessary to complete it.

2. **The Vineland Social Maturity Scale (VSMS)** – VSMS was developed by Edgar A. Doll in 1935 and has been revised several times. It was originally intended for program evaluation and research by assessing the social competence of individuals of ages from birth to 25 years and above. VSMS has been adapted to Indian condition by Fr. A.J. Malin for the age range of birth to 15 years. The scale has eight domains with 89 items. The items are arranged age wise. The domains are : Self help general, Self help eating, Self help dressing, Self direction, Occupation, Communication, Locomotion and Socialization. The raw score is converted as Social Age from which the Social Quotient can be calculated. This scale is administered by a trained examiner who is familiar with the client.

The other adaptive behaviour assessment scales include, Madras Development Programming System (MDPS) and Functional Assessment Checklist for Programming (NIMH-FACP) and BASIC-MR. For details refer SESM 01, Block 2, Unit 3.

3.4 MANAGEMENT OF MALADAPTIVE BEHAVIOUR

The adaptive behaviour deficit is due to deficit in skill areas, whereas maladaptive or problem behaviour is considered as the behaviour which is undesirable in nature. The management programme for both deficits in adaptive behaviour as well as for the problem behaviour is based on the psychological theories of learning principle which is generally termed as behaviour modification. Behaviour Modification is essentially a technique used for changing human behaviour by the application of conditioning or other learning techniques. It is implemented assuming that behaviours are acquired through learning with the influence of the environment.

The term behaviourism was developed by an American Psychologist, Watson (1878-1958). Behaviour Modification is a process, which utilizes the

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systematic application of the principles of learning theories. It is an approach, which focuses on observable and measurable behaviour. Behaviour Modification gives emphasis on methods of changing overt or explicit expression of the behaviour via verbal or bodily action rather than understanding subjective feelings, unconscious process or motivation. The persons with mental retardation by virtue of their condition require assistance in increasing a desirable behaviour by means of skill training and decreasing an undesirable behaviour by means of indirect and direct punishment methods. See the flow chart representation (Fig.1) of the behaviour modification programme.

```
                    ┌─────────────────────────────┐
                    │   Behaviour Modification     │
                    └─────────────────────────────┘
           ┌─────────────────────┴──────────────────────┐
  ┌──────────────────┐                          ┌──────────────────┐
  │  Skill Training  │                          │   Punishment     │
  └──────────────────┘                          └──────────────────┘
```

Skill Training	Punishment
1. To initiate occurrence of behaviour 2. To maintain the occurrence of behaviour 3. To increase the occurrence of behaviour	1. To prevent the occurrence of behaviour 2. To decrease the occurrence of behaviour
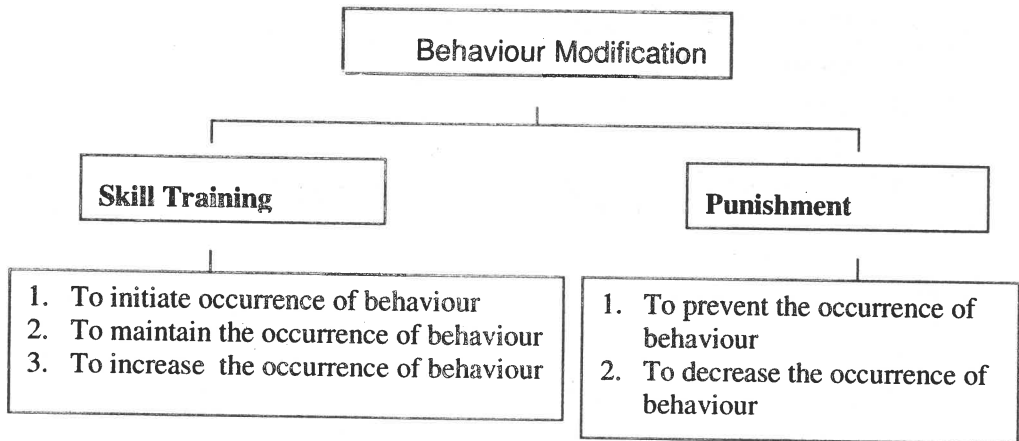
Fig 1: Behaviour modification programme

Through behaviour modification techniques, it is possible to introduce a new system of stimulus - response pattern i.e., a new behaviour can be initiated or the existing behavioural pattern can be maintained or enhanced. This is applied, when a person has **deficits** in skills and require to be trained to achieve the skills. Behaviour modification technique is also applied to prevent or decrease the occurrence of an **excess** behaviour when it is observed as undesirable / maladaptive/ problem behaviour. The essence of behaviour modification is based on various theories/ principle of learning (Fig.2).

```
                    ┌─────────────────┐
                    │  Skill Training │
                    └────────┬────────┘
          ┌──────────────────┴──────────────────┐
┌───────────────────────┐          ┌───────────────────────┐
│  Association Theory   │          │   Social Learning     │
│    of Learning        │          │      Theory           │
└───────────┬───────────┘          └───────────────────────┘
     ┌───────┴───────┐
┌──────────┐   ┌──────────┐
│ Classical│   │ Operant  │
│ Condition│   │ Condition│
│   ing    │   │   ing    │
└──────────┘   └──────────┘
```
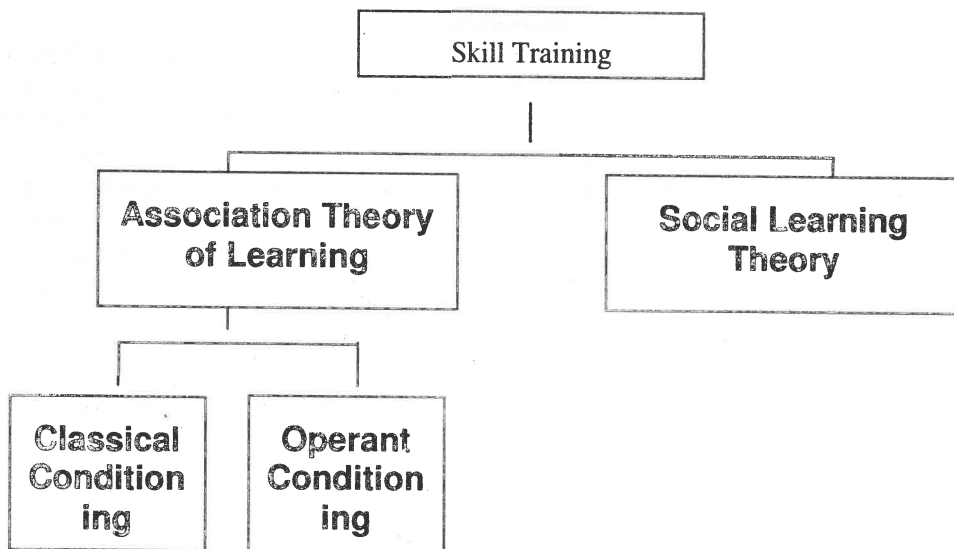
Fig.2. Theories of learning

Association learning explains the functional relationship or connection between the stimulus – response unit through a psychological phenomena known as conditioning. The two popular theories based on the association learning principle are classical conditioning and operant conditioning.

Classical Conditioning - it is a theory explained by a Russian physiologist turned psychologist, Ivan Pavlov (1849-1936). Pavlov evolved this theory from his work on the physiology of digestion, which won him the Nobel Prize in 1904. During the course of study on the physiology of digestion, Pavlov noticed that, his subjects – experimental dogs – salivating at the sight of the dog keeper who brings the food which was actually expected to be happening at the time of giving the food. The food as a natural or 'unconditional stimulus' (US), produces a natural or 'unconditional response' (UR) of salivation in the dog. However, over a period of time, the dog started salivating at the sight of the keeper (neutral stimulus) who brought the food resulting in a new behaviour of responding to a neutral stimulus. By this, Pavlov explained that through the repeated presentation of a neutral stimulus, it is possible to elicit a response similar to that of a natural stimulus-response pattern. Pavlov termed this as **Classical Conditioning**.

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Classical conditioning is a process of pairing a neutral or an indifferent stimulus with a natural stimulus, eliciting a response which is similar to the response to a natural stimulus.

I. Unconditional Stimulus (US) (Food)   → evokes   →   Unconditional Response

                                                           (UR) (Salivation)

   Neutral Stimulus
   (Sight of the dog keeper)   → evokes → Any response or no

                                                          particular response

II. Unconditional Stimulus (US) (Food)

          +

   Neutral Stimulus
   (Sight of the dog keeper)

→ Evokes → Unconditional Response
                          (UR) (salivation)

III. Conditioned stimulus
     (Sight of the dog keeper)   → Evokes → Conditioned Response

                                            (UR) (Salivation)

Once a neutral stimulus gets conditioned, it is likely to elicit the conditional response whenever that stimulus is presented. This process is otherwise known as 'first order conditioning'. Pavlov also conducted further experiments by pairing yet another neutral stimulus with the already conditioned stimulus (the first neutral stimulus) and found that even the second neutral stimulus also evokes the conditioned response similar to that of the unconditioned stimulus - response pattern (for example, the presence of dog keeper was paired with the sound of a metronome giving the response of salivation). This process is called as the 'second order conditioning'.

Further experiments by Pavlov revealed the following:

1.   Even a third neutral stimulus or more than that can be paired with an already conditioned neutral stimulus eliciting the same pattern of conditioned response. This process is termed as 'higher order conditioning'.

2.   The repeated presentation of a neutral stimulus (conditioned stimulus) alone would reduce and eventually stop the probability of a conditioned response. This process is known as 'extinction'. A periodic pairing of the unconditional stimulus with the conditioned stimulus (neutral stimulus) will result in evoking a conditioned response thereby avoiding the process of extinction.

3.   The conditioned response, which underwent extinction, may not lose its properties permanently. They recover at least to some degree over a period of time when the unconditional stimulus is presented in between. This process is known as 'spontaneous recovery'.

4.   Once the neutral stimulus evokes the conditioned responses and the process is established, the same responses can be elicited by a range of stimuli that are similar (not identical) to the original conditioned stimulus. For example, a red colour as a neutral stimulus can be easily conditioned with other colours like orange, pink, violet etc. This transfer of the effects of conditioning to similar stimuli is called as 'stimulus generalization'.

Classical conditioning is also known as 'Pavlovian Conditioning'. The process of Classical conditioning is often described as 'stimulus substitution'. By repeated pairing between a neutral stimulus -conditioned stimulus - and an unconditioned stimulus, the conditioned stimulus becomes a substitute for the unconditioned stimulus by which a response initially elicited by only the unconditioned stimulus is now also elicited by a conditioned stimulus.

Operant Conditioning - This refers to increasing or decreasing the probability of a response/ behaviour in a particular stimulus environment by presenting a reinforcement or punishment following the response. The term 'operant' indicates that the organism operates on its environment to generate a consequent behaviour.

The basic process of operant conditioning has been derived from the works of an American Psychologist, Edward L. Thorndike (1874-1949) based on his theory on 'trial and error learning'. To study behavioural patterns, Thorndike placed hungry cats in boxes and food pellets outside the box. The box was made in such a manner that the cats could escape by hitting a

lever that opened the door of the box. The cat, over a period of time, performed the behaviour Thorndike was trying to condition (hitting the lever) because hitting the lever opened the door for food. Thorndike explained that during initial stages the cat would have hit the lever by chance or accident, but the consistent presentation of food after each time the lever was hit, the cat learned to press the lever to get the food.

Trial and error learning is marked by the successive trials of various responses to a situation, randomly, until one is successful, and attains the goal. In repeated trials these successful responses emit frequently which establishes a new pattern of behaviour.

The trial and error takes two laws as its fundamental principles – the 'law of effect' and the 'law of exercise'. The law of effect holds that, other things being equal, those bonds or association that lead to a satisfying state of affairs are stamped in and those that lead to a dissatisfying or annoying state of affairs are stamped out. The law of exercise which also operates on trial and error learning states that other things being equal, those associations or bonds that are practiced or exercised are stamped in and those not used fade out. Thorndike found that practice must be accompanied by reward or knowledge of result in order to promote learning. **When a response or behaviour becomes instrumental in obtaining the reward, it is instrumental behaviour (in Thorndike's experiment food was the reinforcer for hitting the lever).**

Much of the advanced research on instrumental conditioning has used an apparatus called a 'skinner box', named after its developer, the noted psychologist, B.F. Skinner (1904-1992). A skinner box usually contains a mechanism for delivering a consequence whenever the animal in the box makes a readily identifiable response that the experimenter has decided to reinforce or punish. In studies that involve rewards, the delivery mechanism was usually a small lever or bar in the side of the box. Whenever the animal inside the box presses the lever, it was rewarded with food pellets. In the traditional instrumental conditioning experiment, a hungry rat was placed in a cubic foot box. The rat moves around the box often seeking escape. Eventually it stumbles over the lever and presses it. This action delivers some food to the rat. The rat moves around some more and happens to press the lever again resulting in getting more food. After a few trials, the rat learns that by pressing the lever it gets food. A hungry rat may press the lever more times to get the food, that is, the reinforcement.

Instrumental conditioning procedure can be employed in any environment like, class room set up, home, or work place for selective reinforcement of

desired behaviour. The process of instrumental conditioning can be represented as follows:

Initiating stimulus stimulus	Response	Reinforcing
S (1) $\longrightarrow$ (unknown)	R $\longrightarrow$ (pressing lever)	S (2) (food)
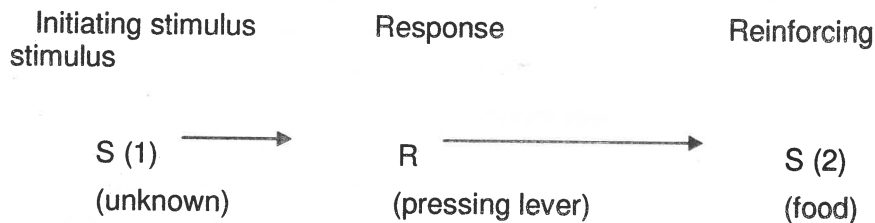
S(1) which is unknown, represents the stimulus condition that first prompted the organism to press the lever. The response of pressing the lever resulted in the availability of reinforcing stimulus, the food - S(2), prompting the repetition of the behaviour which preceded it.

3.4.3 Reward and Punishment

The principle of instrumental conditioning is implemented in three different situations - Reward Training, Avoidance Training and Punishment Training.

A) Reward Training – In reward training, the subject is rewarded or reinforced for making a particular desired response. Reward training is a scientifically designed method to initiate, maintain or strengthen a chosen desirable behaviour.

A reinforcer is any event that increases the probability of the occurrence of a response that precedes it. Reinforcements are basically two in nature:

1. **Positive Reinforcement** – Presentation of a rewarding or pleasant stimulation in order to increase the likelihood that a response will recur. It increases the probability of a response by the 'delivery' of a pleasant stimulus.

2. **Negative Reinforcement** – is any stimulus were removal increases the probability of a response. In other words, it is the process of removal of an aversive stimulus in order to increase the likelihood that a response will recur. For example, some cars produce a beep sound till the door is not closed properly. By closing the door properly, the beep sound is removed or stopped. Thus, the removal or stoppage of the beep sound (unpleasant stimulus) increases the desirable behaviour of closing the car door. Negative reinforcement increases the probability of a response through the removal of an aversive stimulus.

Many events or stimuli can act as a reinforcing stimulus. There are two types of reinforcers :

1. **Primary reinforcers** - those that have survival value for an organism, such as food and water.

2. **Secondary reinforcers** - are neutral stimuli that initially have no value by themselves for the organism. Through pairing with a primary reinforcer, the neutral stimulus becomes a reward. For example, using money to buy food. Secondary reinforcers have been classified into different categories, like:

i. **Material rewards**: Any material liked by the child, like marbles, toys, kite, ball, top, flowers, bindi, bangles, ribbons, chocolate .....

ii. **Social rewards**: Rewards in the form of social gestures, which could be verbal or nonverbal. For example, verbal -'Good', 'Well done', 'Excellent', etc.; nonverbal -' Smile', 'Nod', 'Hug', 'Pat' .....

iii. **Activity rewards**: Permitting to engage in liked activities: listening to music, watching T.V., going out for a stroll, playing with toys or pets, drawing picture ....

iv. **Privileges**: A reward which boosts the status of the child, like, making a child the monitor of a class, making a child the captain of the play team, making the child the leader of a group.....

v. **Token rewards**: Any object that has no established reward value but whose value depends upon learning that it can be exchanged for a primary/ secondary reinforcer. It involves the utilisation of secondary reinforcement to shape behaviour, like marks, points, stars in the class book, giving a

special badge to wear, etc. When rewarding children in groups, **token economy** programs are found to be very useful. This procedure involves giving token rewards for appropriate or desirable target behaviours performed by the child. The advantages of using a token economy program in school/classroom/group settings are:

a) They are simple and easy to implement in a classroom as well as home environment.

b) They do not interfere with the ongoing activities of the group.

c) It can be administered on each individual in a group based on specific behaviours, which need to be increased.

While using the token economy programme the following points are to be noted :

- Specific behaviour of each child in a group needs to be identified for the target group to bring under the token economy programme.

- It is useful to prepare the nature of tokens in advance to be given as the reward. Tokens can be specifically prepared to arouse the interest of the group members. It can be even made out from cardboard paper, plastic chips or wooden materials.

- A separate open economy board displaying the names of the persons in the group is to be prepared with provision for fixing the tokens. This board should be displayed at a place where everybody in the group can easily observe it.

- The members in the group should know very clearly the target behaviour for which the token would be provided. This way, the token also gets a value.

- Provision should be made to exchange the tokens with appropriate identified reinforcements.

- Always reward with the token only for the specific targeted behaviour. The members in the group will develop a sense of competitive mentality if the whole group is made aware of the presentation of token for the target behaviour achieved by a particular person.

- Supplement token with other rewards: - Always use token along with other social rewards, so that children will gradually learn to work for other natural rewards apart from the token.

- To facilitate the goal of independent activity, the presentation of the token needs to be faded in a phased manner.

Guidelines for selecting appropriate rewards: The role of reinforcement has been scientifically established for increasing the desirable behaviour of a person. According to the operant/ instrumental conditioning, the reinforcement or reward should be pleasant in its nature. However, the pleasantness of a reward may vary from individual to individual. For example, while some children may like to be hugged, some children may not even like others touching them!. In the second case, not knowing this, if a teacher hugs the child, it would produce an opposite result, since the child will refrain from a desirable behaviour to avoid the hugging. It is always recommended that each child should be thoroughly verified to identify the preferred rewards. Following are the guidelines to choose the rewards:

a)   A close observation of the child behaviour will help to identify the most liked aspects by the child.

b)   By asking the child directly about his/her most preferred material, objects and events.

c)   By eliciting information from the parents, family members and friends.

A specific reward preference checklist has been developed to be used with children with mental retardation in Indian situation. It has items covered in primary reward, material reward, social reward, activity reward, privileges and token reward (Peshawaria & Venkatesan, 1992)

Avoidance Training: This is a process in which the subject is punished if she/he fails to emit a particular response.   It is a learning situation where the correct response allows the organism to escape punishment.

Punishment Training: A punishment is any unpleasant event that decreases the probability of the reoccurrence of a response that proceeds it. It is awarded to reduce the occurrence or frequency of an undesirable response or behaviour. The subject is punished for making a particular response by introducing an unpleasant situation or taking away present stimulus following an undesirable response.

The details regarding the punishment techniques and its implementation procedure is given in the later part of this unit.

Schedules of Reinforcement: In studies considered so far, it has generally been assumed that each response is followed by a consequence. However, an organism does not have to be reinforced or punished each time when it performs a behaviour. Most people are not reinforced continually. To make the rewarding system more effective and reasonable, different schedules of reinforcement may be used. It is a

program determining when the subject will be reinforced, ; either according to a time (interval) or the number (ratio) of responses one makes. That is, it helps to regulate the award of reinforcement either in a determined (fixed) manner or in an inconsistent (variable) manner. These schedules are as follows:

i. **Fixed Interval Schedule**: A reinforcement schedule in which a reinforcer is delivered after a specified interval of time, provided that the required response has occurred at least once after the interval has elapsed. For example, rewarding a child (who is given the task of : writing) every three minutes for writing appropriately.

ii. **Variable Interval Schedule**: A reinforcement schedule in which a reinforcer is delivered after a predetermined but varying interval of time, provided that the required response has occurred at least once after the interval. For example, rewarding a child (who is given task of writing) at different timings, like, after one minute, then after three minutes, then after two minutes, and so on.

Continuum of reinforcements:

Continuous Reinforcement → Variable Reinforcement (interval or ratio) → Fixed Reinforcement (interval or ratio) → Fading   extinction (Fig-3)

While training a child with mental retardation, continuous reinforcement may be required in the beginning. This can be progressively shifted to the variable (interval or ratio) model, since variable mode of reinforcement has a better overall rate of response. Variable mode of reinforcement may be followed by the fixed (interval or ratio) mode of reinforcement. It is easy to wean off (fading) the delivery of reinforcement from this mode.

Fading: is the process of gradual decrease of assistance applied to the active assistance when teaching specific behaviours.
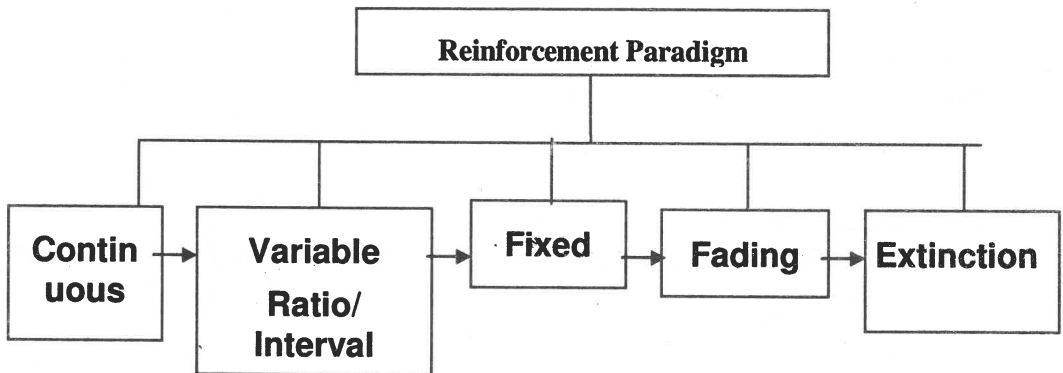
Fig-3 Continuum of reinforcement

Guidelines for the implementation of rewards: Implementation of the reward is as important as choosing the reward. Proper care needs to be taken that the skill or the behaviour being rewarded is desirable in nature.

i.   Reward only desirable behaviours -before starting to teach, decide which behaviours are to be rewarded and which are not to be rewarded.

ii.   Be clear and specific in instructions while rewarding certain behaviours of children.

iii.   Reward immediately after desired behaviour in the beginning

iv.   Reward target behaviours every time after it occurs. (see continuum of reinforcement

v.   Reward in appropriate amount/quantity.

vi.   Combine the use of social rewards along with other types of rewards.

vii.   Change/alternate rewards.

viii.   Fading of rewards -As the child acquire the behaviours, the rewards need to be gradually removed to make him/her independent with the skill.

Social Learning – This is the process of learning new responses by observing and then imitating the behaviour of a model. It is also called as observational learning. According to Albert Bandura, the proponent of this theory, observational learning accounts for a great deal of human learning. Though behaviour is generally assumed to be learned through reward and punishment of instrumental responses, informal observation as well as experimental studies on social learning process shows that new responses may be rapidly acquired and existing behavioural patterns are considerably changed as a result of observing behaviour and attitudes exhibited by others. In this manner, both desirable as well as undesirable behaviour is

acquired. In therapeutic situations, the clients are made to observe the behaviour of 'models'

3.5 PROBLEM BEHAVIOUR

The problem behaviour which are commonly observed with children with mental retardation are classified broadly into ten category as follows:

i.   Violent and destructive behaviours : – tearing of books, breaking objects, throwing objects ....

ii.   Temper tantrums   – rolling on the floor, screaming, crying excessively....

iii.   Misbehaviour with others – grabbing objects from others, spitting on others....

iv.   Self injurious behaviours – banging head, scratching self pulling own hair, biting self, peeling skin, wounds ....

v.   Repetitive behaviour – rocking body, nodding head, shaking parts of the body repeatedly ....

vi.   Odd behaviours - smiling, laughing or talking to self without reason, collecting rubbish....

vii.   Over activity – Does not sit at one place for required time, does not complete the task at hand....

viii.   Rebellious behaviours – refusing to obey commands, doing opposite of what is requested ....

ix.   Antisocial behaviours – stealing, cheating in games, telling lies or twisting the truth, blaming others ....

x.   Fears – fear of places, persons, animals or objects .....

The skill training for the deficits in adaptive behaviour has been discussed in the earlier chapters. The management programme for the undesirable or problem behaviour involves an elaborates observation of the behaviour thereby identifying the reasons behind its expression. It is estimated that about 60% of persons with mental retardation have problem behaviour. It is observed that there could be difference in the classification of behaviour as problematic or not. The behaviour which is considered as problem behaviour by one person may not be considered a problem behaviour by another person. In order to draw some guidelines to categorize a behaviour as problem behaviour the following aspects may be looked into:

a)   When the behaviour is harmful to oneself

b)   When the behaviour is harmful to others

c)   When the behaviour interferes with the learning process

d)   When the behaviour is not socially accepted

e)   When the behaviour is not appropriate

The above characters could be observed in everybody. Rare occurrence of these behaviour cannot be termed as problem behaviour. The criteria used in this regard is :

-       *Intensity* or severity of the behaviour,

-       *Frequency* or number of time of occurrence of the behaviour

-       *Duration* of time of the behaviour.

Crying, for example, is a common behaviour seen in children. But if a child cries for every petty reason, so frequently that, it happens in every one or two hours, it cannot be considered as normal. Similarly crying very loudly (high intensity) and lasting for a long duration cannot be considered as normal.

Guideline to Identify the Undesirable behaviour

- When the behaviour is Injurious to self
- When the behaviour is Injurious to others
- When the behaviour Interferes in learning process
- When the behaviour is not age appropriate
- When the behaviour is socially unacceptable

↓

Identification/ Prioritisation

Observation/Baseline Recording   Event recording

                                                        Duration

                                                        Interval

                                                        Time sampling

Functional Analysis   -   ABC   pattern

Reason   -   Self stimulation

                                                        Attention seeking

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$$\downarrow$$

Identification of rewards

Fig-4 Guidelines for identification of undesirable behaviour

3.5.1. Steps in identifying problem behaviour

The behaviour modification technology for decreasing the undesirable behaviour involves a detailed assessment of the child in tune with the principle of developing IEP. The following steps are involved in this process. (see also Fig-4).

i.   **Identification of problem behaviour:** Once a problem behaviour is brought to the notice of the teacher, it is his/her duty to identify it appropriately – by applying the guidelines given in this regard .

ii. **Behavioural description of problem behaviour:** In behaviour modification, symbolic terms of the behaviour has no value. Only behavioural terms are used for describing a behaviour. For example, the problem behaviour 'anger' can be viewed as, abusing somebody, shouting at others, beating others, or self-beating throwing things at others. Hence, by using the term 'anger' it will not be possible to plan a management program. It is essential that the behaviour is described in an objective manner which could be observed and measured.

iii. **Principle for selection of problem behaviour:** A child may possess more than one problematic behaviour. But only one or two problems at a time is selected for management since, selection of more problems would pose difficulty in controlling the environmental factors which has influence on behaviour. This selection or the prioritization of the problem behaviour is done by applying the following criteria:

a)   choosing the problem behaviours which are easy to manage as this will help the teacher to gain confidence in managing more difficult problem behaviour later.

b)   choosing problem behaviours which are dangerous in nature for self or to others.

iv.   **Baseline assessment (observation technique):** Observation is the process in which one or more persons observe what is occurring in some real life situation and pertinent happenings are classified and recorded according to some planned scheme. There are four points for observation : a) what to observe, b) when to observe, c) how to observe, and d) where to observe. Behaviour can be observed by direct observation or by automatic recording. Commonly used observation techniques are:

a)   **Event or frequency recording:** In the event or frequency recording, the number of occurrences of the problem behaviour is documented after direct observation for a specified period of time in a given day, which is repeated for a minimum of three days. This will enable the teacher/person concerned to get more idea about the behaviour under observation. This will also enable to find out the average occurrence of the problem behaviours like, beating, pushing, not sitting at one place etc. (the occurrence of the behaviours which could be counted in numbers). It is not appropriate for behaviours of verbal duration and frequently occurring behaviours, where it is difficult to count.

b)   **Duration Recording:** This is used to record behaviours which vary in its length of occurrence. For examples, not paying attention in the class (staring out side), over active behaviour, rocking behaviour, etc. Recording of the behaviour is obtained by documenting the duration (endurance) of occurrence of the problem behaviour for a specified period of time in a given day, which is repeated for a minimum of three days. The average duration of occurrence of the problem behaviour could be calculated for the specified period of time. This method is useful to record behaviours which vary in length. However, continuous attention is required for accurate assessment, which may not be always possible in group teaching set-up.

c)   **Interval Recording:** Occurrence of the problem behaviour is observed in short span of intervals like, observing the

behaviour in every one hour for five minutes. It can be used for recording both frequency and duration responses. However, even if the problem behaviour occurs in between, the recording will be done only during the .interval chosen for the same.

d) **Time Sampling**: The problem behaviour is recorded only at a predetermined time. For example, observing the behaviour of the child at every 30 minutes interval. This method is used when the frequency or the duration of the problem behaviour is more. It does not require continuous observation.

3.5.2 Functional Analysis

Functional analysis (Behavioural analysis) : Functional analysis is the process of understanding the complexity of the problem behaviour in its simpler or most elementary parts. The problem behaviours which are learnt, may have various environmental influences. According to learning theories, learning occurs through association (classical and operant conditioning), and observation learning etc. There are a number **of models** available for analyzing behaviour problems. One of the simplest models is known as **A-B-C-** model, which is used commonly to analyse problem behaviours of mentally retarded children. This model helps to identify the factors, which contribute to the occurrence of the problem behaviours.

-   **A** stands for the **ANTECEDENT factors**. The analysis of antecedent will help the teacher to find the factors which contribute to the problem behaviour **before its occurrence.** The following factors have to be looked into to get more information in this regard:

    a) When does the problem behaviour generally occur, - during recess, or in the class room when the teacher is busy with another student, or during lunch break .....,

    b) Are there particular times of the day when the problem behaviour tends to occur more - for example, during morning hours or meal times........

    c) With whom does the problem behaviour occur - are there specific place or situation where the problem behaviour occurs. -- in the school play ground or classroom or at home or when the child is sitting alone ......

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d) Where does the problem behaviour occur, that is, are there specific place or situation where the problem behaviour occurs. Example – in the school play ground or classroom or at home or when the child is sitting alone ....

- **B** stands for the **BEHAVIOUR**, that is, what happens **during the problem behaviour**. Results from the base line assessment of the behaviour will help to analyse the 'during' factors contributing to the problem behaviour, that is, it will answer the following question: How many times does the problem behaviour occur, or for how long does the problem behaviour occur.

- **C** stands for the **CONSEQUENCES** of the behaviour, that is, the factors which follow immediately **after the behaviour**. Analysis of 'after' factors include answering the following questions:

a) What is the reaction of the people around the child *immediately after* the occurrence of the problem behaviour.

b) What effect does the problem behaviour have on the given child or others?

c) Does the child *benefit* or gain something by indulging in the problem behaviour?

The analysis of consequences or after factors generally shows that most of the behaviours have a link with benefits (reward or reinforcement). As per the operant conditioning therefore, if there were no benefits, the behaviour would cease to occur. Thus functional analysis gives the complete details which would help in identifying the reasons for the behaviour.

Reasons for problem behaviour : According to Behaviouristic theories, a behaviour is a component of a stimulus and a response. The stimulus factors could be the reason behind a behaviour. Research studies on the behavioural analysis of the problem behaviour of person's with mental retardation have indicated the following reasons:

a) **Attention Seeking Factors :** Attention has a tremendous influence in the behavioural pattern of an individual – be it any age level. It may not be possible for a person to live without seeking attention from another person. The very simple fact that we talk to others is because we are attended to. But on many occasions, we tend to

seek attention inappropriately. And, if we succeed in getting attention to the inappropriate behaviour, it acts as a reinforcement which will make the inappropriate behaviour to occur again – even an eye contact can be a reinforcer. It has been observed that attention seeking behaviours constitute a major reason for the problematic behaviour of mentally retarded children. In the class room set-up, the teachers need to find out whether a particular problem behaviour is occurring to get attention. If the problem behaviour tends to occur more when you are not paying attention to the child and stops when you attend to the child, it means that it is an attention seeking behaviour.

b) **Self stimulation**: Sometimes children learn to indulge in repetitive behaviours such as body rocking, thumb sucking etc. This is more commonly observed with severely and profoundly retarded children. Usually self stimulatory behaviours increase when these children are without any meaningful activity.

c) **Escape**: On many occasions children may indulge in problem behaviours in order to escape from a given responsible task. For example, whenever the teacher assigns a task to a child to perform, he/she may start crying after which the teacher may withdraw that activity. Since the crying is followed by the *pleasant event* of refraining from the task, the child will gradually learn to cry in order to get away from the activity. If a child's problem behaviour increases in the presence of demands and stops when the demands are removed, it suggests that the child is indulging in the problem behaviour to escape certain demands or situations.

d) **Tangible factors**: Some problem behaviour in children may be actually fetching them tangible/ material rewards. For example, if mummy gives a biscuit to the crying child so as to make him stop crying, the child may temporarily stop crying. But in the long run and indirectly, mummy has actually taught the child to cry frequently, as it easily fetches him a tangible reward. This again, is a very commonly observed reason for the problem behaviour like 'stubborn' and 'tantrum' behaviour.

e) **Skill deficit factors**: This contributes to many problem behaviours in mentally retarded children. When a child has not learnt or does not know how to behave or respond in an appropriate manner, his problem behaviour may be an indirect expression of this underlying skill deficit. For example, a child who wants to look at the new colour

book of his/her friend may snatch it, because of poor communication skill.

v.   **Identification of rewards:** In behaviour, whether it is for increasing the desirable behaviour or for decreasing the undesirable one, identification of rewards/reinforcement is an important step. This helps for the skill training – by way of presenting the reward – and for the management of the problem behaviour – by stopping its presentation, if it is followed by the problem behaviour.

3.5.3 Management

This is based on a thorough understanding of the antecedent and consequence of the behaviour, for the purpose of controlling specific problem behaviours in children. Hence, the same problem behaviour of 'beating others' may not have the same management technique, if the antecedent and the consequence are different. The teacher must decide about the package program consisting of various techniques to be used for managing problem behaviours as per the requirements. If 'before' factors are more important in determining a specific problem behaviour, the management technique is to gain control over these situational factors triggering the problem behaviour. And, if 'after' factor determines specific problem behaviour other techniques have to be employed. Techniques to reduce the occurrence of problem behaviours are broadly divided into two categories of Non-punishment techniques, and Direct-punishment techniques.

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                    ┌─────────────────────────┐
                    │      MANAGEMENT         │
                    └─────────────────────────┘
                              │
              ┌───────────────┴───────────────┐
              ▼                               ▼
   ┌──────────────────────┐       ┌──────────────────────┐
   │  Direct Punishment   │       │  Indirect punishment │
   └──────────────────────┘       └──────────────────────┘
              │                               │
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Direct Punishment	Indirect punishment
Ignore	Differential reinforcement of **opposite incompatible** behaviour
Environmental Manipulation	Differential reinforcement of **other** behaviour
Time out	Differential reinforcement of **alternative**
Response prevention	
Physical restraint	
Response cost	
Correction/ over correction	

Fig-5 Management of problem behaviour

Punishment: This is a behavioural technique, used for controlling/reducing/preventing the occurrence of an undesirable behaviour. Punishment is presentation or withdrawal of an event followed by a behaviour to decrease the occurrence of the target behaviour. It involves :

a)   the techniques to control the antecedent factors influencing the undesirable behaviour, and

b)   The techniques to control the undesirable behaviour by removing – taking away – the consequence, or by awarding/ presenting an unpleasant stimulus, immediately after the occurrence of the undesirable behaviour.

This removal or taking away of the consequence should not be confused with *negative reinforcement* which is *removal of an aversive/unpleasant stimulus to increase/ strengthen* the occurrence of a desirable behaviour, whereas, in punishment, a reward/reinforcement followed by a response is removed to reduce / decrease the occurrence of an undesirable behaviour

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Non-punishment techniques are the first choice of management plan for reducing the undesirable behaviour. Ethically no one has the right to physically hurt or deprive others of their right. Therefore punishment should be only the last resort if other techniques fail. Ideally it should not be used.

Direct Punishment Techniques :- These involve the methods to diminish the occurrence of the undesirable behaviour. However, direct-punishment techniques are described here first for the purpose of better understanding of the non-punishment techniques.

i. **Restructuring of the environment (Environmental manipulation)** :- If it is established that both antecedents and the consequence have the immediate environmental influences for the undesirable behaviour, restructuring the environment could control the occurrence of that undesirable behaviour. For example, it is established that Mangesh always makes the shriek noise during the class due to the antecedent factor that, whenever Jayesh sits next to Mangesh, he always tickles Mangesh; and due to the consequence that, everybody laughs when Mangesh make the noise, giving him a pleasant feeling. Here, The restructuring of the environment can be changing the seating position of Mangesh and Jayesh.

ii. **Extinction** : This is the technique of re-arranging the consequence of an undersirable behaviour so that attention or activity rewards do not follow. It is also called as Ignoring. This includes non presentation of a reward – attention. Ignoring involves not coaxing, not chasing behind the child, not scolding, not giving an activity, not looking at him, or noticing the child. Ignoring is the easiest technique to describe, yet one of the most difficult techniques to implement effectively.

    a) Some of the problem behaviours cannot be ignored, like, if the child is harming others or himself to get attention, immediate intervention is essential.

    b) The problem behaviour initially shows an increase before it actually comes down while using extinction method.

    c) If extinction is used, then all others concerned with the child have to apply this technique. Otherwise, if attention is not given by one person the child may obtain it from others thereby continuing with the problem behaviour.

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iii. **Time out**: This is the process of weakening of undesirable behaviour pattern by removing the individual to a nonreinforcing area. It is essential to establish that there are reinforcement for the occurrence of the problem behaviour. During time out, a child is put in a situation where any possibility for reward is removed entirely for a short period of time (2 to 3 minutes). For example, standing in the corner of the room facing the wall, immediately following the problem behaviour, or keeping the head down on the desk etc.

iv. **Response Prevention**: This involves prevention of the undesirable behaviour even before its occurrence. For example, holding the hand of the child before beating, thereby preventing it from occurring. Response prevention may elicit an immediate and forceful repetition of the undesirable behaviour. However, the intention here is not to indulge in a physical conflict with the child. Hence response prevention should be implemented after carefully analyzing the behaviour, which is to be modified.

v. **Physical Restraint**: This technique involves restricting the physical activities after the occurrence of an undesirable behaviour. Mild physical restraint is helpful in bringing down aggressive behaviours. This includes restriction of the physical activity of the child, for example, tying hands – not tightly to the extent of given pain – immediately at the back for a short period of time (2 to 3 minutes) or holding the hand gently to sides and saying assertively not to repeat the behaviour, such as biting self, thumb sucking and tearing papers occurs.

vi. **Response Cost:** This is a technique in which an already awarded reinforcement (as part of strengthening the occurrence of a desirable behaviour) is taken back, following an undesirable behaviour. This method is generally used when tokens are being used for increasing the desirable behaviours so that, following a particular problem behaviour, the tokens earned by the child is taken back. Here, the person pays the cost of doing a particular undesirable behaviour.

vii. **Restitution/restoration**: This refers to a procedure that requires an individual to return the environment to its state prior to a behaviour that changed the environment. That, restoring the disturbed environment back to the normal condition. For example, a child throwing rubbish/ paper on the floor is to pick up the same and put in the waste basket.

viii. **Over Correction**: This is a technique which involves a combination of procedures. It not only teaches what the person should not do but also educates on what he should do. It is of two types:

a) Restitutional over correction: This refers to restoring the disturbed environment back to more than normal conditions. The person following problem behaviour, for example, throwing food on the floor is asked to clean not only that area but the entire room.

b) Positive practice : This refers to practicing an appropriate behaviour as a consequence for inappropriate behaviour. It means stopping all activities, whenever an error occurs and then carefully performing the correct behaviour several times.

No reinforcement is awarded after the positive practice or restitution is implemented. It may happen that all times, the child may refuse to obey the instructions involved in positive practice or restitution. In that case, he has to be physically guided to do so (not by applying force). Even after this, if the child refuses, his preferred activities (Example, playing, watching TV, wearing a particular dress etc.) or materials, or even most preferred food items like papad, sweet etc. (not the essential food) can be withheld.

ix. **Aversive Therapy :** This is a technique that reduces the frequency of the undesirable behaviour by associating it with real or imagined aversive stimuli during a conditioning procedure. The procedure involves application of mild shock (between 10 to 60 volts) to induce a painful stimulus or the presentation of a strong and disgusting smell followed by an undesirable behaviour. This method is used very rarely when all other techniques fail to give results. For example, in conditions like severe head banging or other similar type of self-injurious behaviour. It is suggested that this technique be monitored by a trained clinical psychologist.

3.6 DIFFERENTIAL REINFORCEMENT

Non – *Punishment Techniques :* Non-punishment techniques simultaneously aim at the reduction of the undesirable behaviour and the occurrence of a desirable behaviour. The principle used in achieving this, is the **differential reinforcement techniques**. Differential reinforcement is

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the procedure of the application of reinforcement to one of the two alternatives. There are four types of differential reinforcement:

I) Differential Reinforcement of Incompatible behaviour (DRI): This is also called as Differential Reinforcement of Opposite behaviour to the undesirable behaviour. For example, a child who is overactive, if he sits at a place for a specific period/ duration, he is reinforced.

II) Differential Reinforcement of Other behaviour (DRO) : The process of reinforcing only desirable behaviour other than the target undesirable behaviour. For example, a child who beats others for minor reasons, does not do that on a particular day, for a specific period time, and is engaged in some other activity which is not problematic, is reinforced.

III) Differential Reinforcement of Alternate behaviour (DRA): The process involves diversion of a probable undesirable behaviour by presenting a desirable behaviour and reinforcing it. For example, two children who fight frequently for trivial reasons are given an opportunity to work together to make something both of them like very much, and are frequently reinforced for their joint effort. In reality, the frequent fighting behaviour is replaced by a desirable behaviour of joint completion of a task.

IV) Differential Reinforcement of Low rate of response (DRL): This technique is used to control when a behaviour in its low frequency is desirable but when occurs more frequently, is undesirable. For example, a child who is repeatedly asking the teacher whether it is a holiday the next day, despite telling him every time that it is not a holiday. Here, asking this question once is reasonable and a desirable behaviour. But asking the same question every now and then despite telling him, is an undesirable behaviour. DRL can be applied here by responding to his question only once and not paying attention to his question when it is repeated. This, over a period of time will make the child to maintain the desirable behaviour in its required frequency.

Evaluation: Management of the undesirable behaviour requires close observation. The problem behaviour and its management strategies are basically influenced by the environmental factors which may go un-noticed by the teacher or the person responsible for implementing the programme. Sometimes the management technique selected could be inappropriate or the functional analysis, inadequate. Monitoring of each session and its evaluation will help to replan the strategies by changing management techniques or other

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variables which influence the behaviour. Using a combination of methods as a package program normally helps tackling problems better rather than just one method.

Priority should be given to the differential reinforcement techniques as it has the potential to increase a desirable behaviour while reducing an undesirable behaviour.

3.7   UNIT SUMMARY

- Behaviour is learnt. One can have inappropriate behaviour due to deficit in skill areas or due to a desire for need fulfillment.

- Classical conditioning and operant conditioning are two theories based on association learning principles.

- Reinforcements increase the probability of recurrence of a behaviour. Reinforcers are to be carefully selected and delivered if they have to be effective.

- Identification of problem behaviour: Such as directly observing the child, interviewing parents, caretakers of the child using a problem behaviour checklist.

- Behavioural description of problem behaviour: Describing the problems in behavioural term helps to offer the management techniques. That is, stating the problem behaviour specifically in observable and measurable terms.

- Prioritisation / Selection of problem behaviour: It is always preferrable to select only one/two problem behaviour at a time rather than trying to manage all of them at the same time. Prioritisation is done by choosing either the easily manageable or the more dangerous one or as per the priority given by the parents.

- Base line assessment (Observation techniques): It is the process in which the behaviour is observed and measured in real life situation. Some of the techniques used for this purpose are : a) Event or frequency recording, b) Duration recording, c) Time sampling recording, and d) Interval recording.

- Functional Analysis or Behavioural Analysis: Helps in identifying the exact environmental events that contribute to the expression of the behaviour in an objective manner and those events that are potentially manageable. The model used for the functional analysis is : A – B – C Model, where A is the Antecedent factors of the behaviour, B is the Behaviour under observation, and C is Consequence factor of the behaviour.

- Reasons for problem behaviour: Commonly identified reasons for the problem behaviour of the mentally retarded persons are : a) attention seeking factors, b) self stimulation factors, c) skill deficit factors, d) escape, and e) tangible factors.

- Identification of rewards: Information on reinforcements are required for managing problem behaviours also since many problem behaviour occur because of the reinforcement it gets.

- Management: Through the direct punishment techniques like a) restructuring of the environment, b) extinction, c) time out d) response prevention, e) physical restraint, e) response cost, f) over correction g) aversive therapy and through non-punishment techniques like, a) Differential Reinforcement of Incompatible behaviour, b) Differential Reinforcement of Other behaviours, c) Differential Reinforcement of Alternative behaviour, and d) Differential Reinforcement of Low rate of response.

- Evaluation: For monitoring the efficacy of the management techniques.

3.8 CHECK YOUR PROGRESS

1. What is maladaptive behaviour

2. What are the tools used for assessment of maladaptive behaviour

3. Explain operant conditioning

4. Define the following
   a) Primary reinforcement
   b) Secondary reinforcement
   c) Fixed interval schedule
   d) Variable interval schedule

5. Define and explain A-B-C.

6. Briefly explain the following
   a) Response cost
   b) Time out
   c) Restructuring the environment
   d) Restitution

7. Test the Differential reinforcements

3.9 POINTS FOR DISCUSSION / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification or other. Not down those points below.

3.9.1 POINTS FOR DISCUSSION

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3.9.2 POINTS FOR CLARIFICATION

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3.10 ASSIGNMENT/ACTIVITY

- Select a child in your class who exhibits problem behaviour. Do a functional analysis and suggest techniques for modifying the behaviour.

3.11 REFERENCES /FURTHER READINGS

1   Grossman, (1977). American Association of Mental Deficiency manual.

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3   Mazur, J.E. (1986). Learning and behaviour suggested readings, New Jersy : Prentice Hall Inc. Englewood Cliff.

4   Peshawaria, R. & Venkatesan, S. (1992). Behaviour approach to teaching mentally retarded child, NIMH, Secunderabad.

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UNIT 4:SENSITIZATION OF FAMILY, INVOLVEMENT IN PRE-SCHOOL AND PRIMARY LEVEL

STRUCTURE

- Introduction
- Objectives
- Understanding the term `Motor'
- Movement and posture
  - Importance of movements and postures (Motor skills)
- Types of movements and postures
  - Movements
  - Postures
- Further classification of voluntary movements
  - Individual and whole-body movements
  - Gross-motor and fine-motor movements
  - Movement according to qualities
- Disorders leading to difficulties in gross-motor and fine-motor actions
  - Disorders of the skeletal system
  - Disorders of muscle system
  - Disorders of nervous system
    - Disorders in motor pathways
    - Involuntary movements
- Gross and fine motor impairments
  - Mental retardation and motor development
  - Neuromotor difficulties
  - Sensory-motor difficulties
  - Eye-hand coordination difficulties
- Locomotor/mobility related problems

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- Hand functions and mobility
- Mobility related problems

o **Unit Summary: Things to remember**

o **Check your progress**

o **Assignments/Activities**

o **Points for discussion/clarification**

o **References/Further readings**

o
4.1 INTRODUCTION

Motor aspect is a fundamental characteristic of all animals. Animals are capable of making movements owing to this characteristic of motor aspect. With the help of motor aspects animals are able to adapt themselves to the demands made upon them by the environment.

The **skeletal system** i.e. the bones, provide levers; and the joints provide the axis. Owing to levers and axes a wide variety of movements can be performed. The **muscular system** i.e. the muscles provide the force to bring about the movements. The **nervous system** provides a network of sensory and motor transmissions for initiating and/or prohibiting muscle action. Thus it coordinates the movement. These three systems constitute the motor aspect.

Impairment in these aspects results in difficulties in movement. These difficulties lead to poor adaptation with the environment. Many children with disabilities demonstrate delay and deficits in carrying out movements. Incase of mental retardation delay and deficit in movements is one of the first signs, which indicates retardation. However, it is to be remembered that not all children having mental retardation have deficits in motor development.

4.2 OBJECTIVES

After going through the unit you will be able to;

- explain the term `motor'

- differentiate between `movements' and `postures'

- describe the mechanism for movements and postures

- explain the stages of normal motor development

- state the principles of development of motor control

- explain the disorders leading to difficulties in gross-motor and fine-motor actions

- describe how motor development is affected in case of mental retardation.

- explain the problems relating to functions of hand

- explain the problems relating to locomotor functions.

4.3 UNDERSTANDING THE TERM `MOTOR'

The term 'motor' specifically refers to any mechanism which produces movement. Thus a mechanism (or device) which creates an electro-magnetic field that produce rotational movement in a shaft for turning the wheels of a machine is an 'electric-motor'. In the context of human beings (and for that matter all animals) the term 'motor' is used broadly. Rather than referring specifically to the mechanism (i.e. bones, muscles and nerves), here it refers generally to the product of the mechanism i.e. motor actions. Thus when learning about the motor aspect, actually you will be learning a little about the mechanism and more about the product.

4.4   MOVEMENT AND POSTURE

Observe several students (children) in a special school for a couple of hours and write down all the motor actions which they do use.

You must have noted down some of the following motor actions of the children

- The child moving his legs – for walking
- The child grasping his hand-for holding an object
- The child moving (opening and closing) his jaw-for talking
- The child sitting on a chair
- The child moving his tongue for licking a lollipop
- The child shutting his eyelids for avoiding dust blowing into his eyes
- The child tapping his feet for keeping rhythm with music
- The child standing on the playground
- The child expanding and contracting his chest for breathing
- The child extending his arms when jumping from a height
- The child's neck moving when the child tries to look up at a ceiling fan
- The child thrusting his index finger for pressing a switch

There are some motor actions which you may not have noted down because they were not visible. These are;

- The child's heart beating for pumping out blood
- The child's stomach churning for mixing up all the food eaten

All these motor actions involve motor mechanism (i.e. bones, muscles and nerves) but it is obvious that all the motor actions are not movements. For example in the

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motor action of sitting or standing the child's body or any part of the body was not actually moving. Motor actions in which there is no movement is a **posture**.

Box-1

DIFFERENCE BETWEEN MOVEMENT AND POSTURE

MOVEMENT is a motor action in which muscles act so as to bring about required motion. This results in changes in the alignment of the entire body or any part/parts of the body. The entire body or its part/parts actually move.

POSTURE is a motor action in which muscles act for keeping the entire body in a given alignment. This provides formation of an essential body-base and maintains stability of the body. There is no movement of the entire body or its part/parts.

4.4.1 Importance of movements and postures (motor skills)

Movements and postures are products of motor mechanism. These products are generally referred to as **motor skills.** Motor skills are very important.

Motor skills such as locomotion (i.e. moving body from one place to another), reaching and grasping object by hand, maintaining posture and orienting one's body in relation to objects in the environment allow the child to interact with, control and eventually, master the environment.

Motor skills also form the base of child's ability to perform behaviours in other developmental domains. For example

• Speaking involves precise movements of lips, tongue and jaw

• Social skills such greeting or playing involves coordinated movement of arms, legs and body

• Dressing skills involve movements of legs, arms and fingers.

Even cognitive skills, which are the end result of perceptual processes, require motor skills. For example, you are able to perceive and hence conceptualize how tall Qutab-Minar is, when you extend your neck (and perhaps upper back) as backward as required to work at it.

4.5 TYPES OF MOVEMENTS AND POSTURES

Differentiating motor actions into movements and posture is not the end of classifying them. There is further classification of movements as well as of postures.

1.5.1 Movements

Now let us classify the movements first. Some of the movements mentioned in the list occur all by themselves. The child (person) in whom these movements occur cannot exert any control over these movements. These are called **Autonomous Movements.**

Examples of autonomous movements listed in 1.4 are;

(i)   beating of the heart

(ii)   Churning of the stomach

(iii)   Breathing (please note that though the movements for breathing can be increased or decreased by control, they cannot be stopped. Hence normal breathing should be understood as an autonomous movement)

Some other movements occur by themselves at a given instance. Though normally the person can make the same movement by exerting control, under special situation the movement occurs without the person controlling it. These are called **Reflex Movement** and **Reaction Movement**. Please refer Box-2 for the difference and examples of reflex movement and reaction movement.

BOX-2 DIFFERENCE BETGWEEN REFLEX AND REACTION MOVEMENT

In a reflex, the movement which occurs as a response to some situation is always the same. The person cannot control it in any way, even though in other situations, the muscles, which bring about the action of the response, are under the control of the person.

Example 1 Normally a person can open or close his eyelids with control. But when something threatening, e.g. dust particles, hot air, sudden bright light, approaches the eyes, the eyelids close on their own in order to protect the eyes. This is the **blinking reflex**.

Example 2 Normally a person can control his throat muscles for regulating his voice. But if something threatening e.g. cough accumulating in the throat, water choking the windpipe opening, fingers thrusted inside the throat, occurs, the

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throat muscles act on their own to throw out of choking. This is the **gag reflex**.

REACTION MOVEMENT

In a reaction the movement which occurs as a response to some situation may vary. The person cannot fully avoid the response, but may be able to control the degree of the response.

Example 1: when you lift a heavy object, say a bucket full of water, by your right hand your body tilts towards the right side and your left arm abducts (i.e. moves away) at the shoulder for maintaining body-balance. **This is tilt-reaction.** You may control the tilt of the body and/or the angle at which the lift arm should abduct.

Example 2: When you want to see an object, which is exactly behind you, you turn your neck and while so doing your shoulder girdle also turns in the direction of your neck. **This is righting reaction.** You may control the degree through which your shoulders turn.

Lastly there are movements, which are fully under the control of the person and are carried out at the desire of the person e.g. walking holding an object in the hand, pushing a button with a finger. These are called **Voluntary movements.** They are also referred to as **Volitional Movements.**

Voluntary movements are themselves of many types. Their classification and descriptions are mentioned further in 1.6.

1.5.2 Postures

There are two basic types of postures; Inactive postures and Active postures.

Inactive Postures are those, which make minimal demands upon the activity of a muscle. Examples of inactive postures are resting, sleeping and relaxing.

Active Postures are those in which there is an optimal demand for an integrated activity of many muscles. Active postures are further categorized as **Static postures** and **Dynamic postures.**

Static postures are those in which a constant pattern of the body is maintained. In this pattern, the joints are stabilized and body-balance is sustained against the force of gravity. Examples of static postures are sitting, kneel-standing (i.e. standing on knees), squatting and standing.

Dynamic postures are those in which the pattern of the body is constantly modified and adjusted so as to perform a movement. Examples of dynamic postures are crawling, walking and kicking a ball, throwing a stone.... Infact all movements. **It is important to note here that movements are essentially a sequence of many postures in a serial manner.**

CHART I INTER-RELATION OF MOTOR ACTIONS

Motor Action

Autonomous movements   Movements   Postures

                            Reflex movements   Active   Inactive

Postures   Postures

                        Reaction movements

Postures

| Voluntary   =   Dynamic | Static
| Movements | Postures

Postures
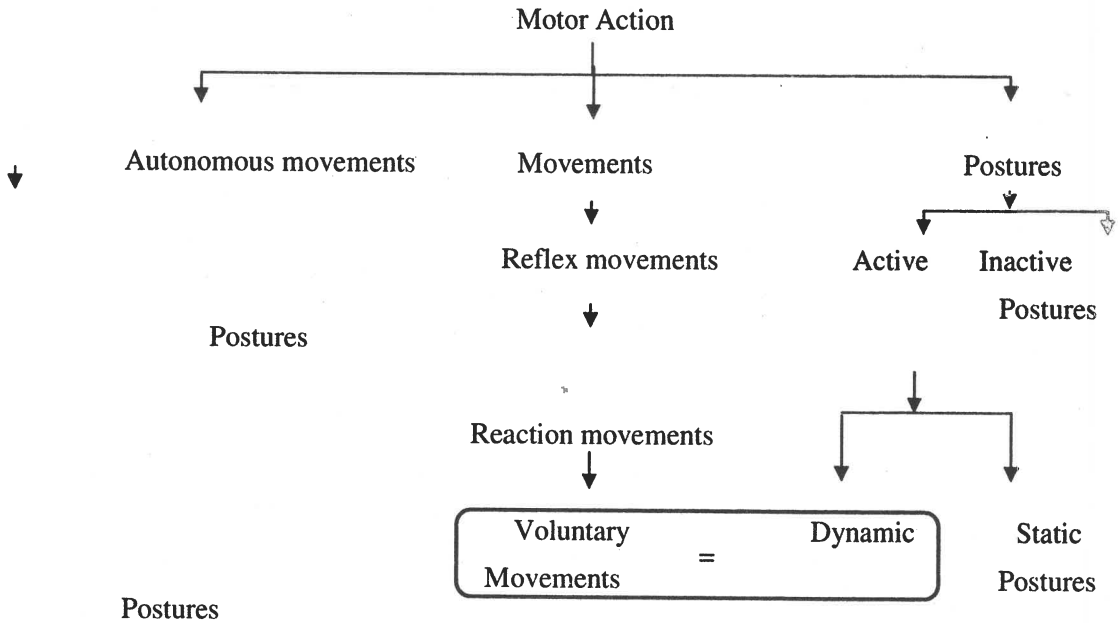
4.6 FURTHER CLASSIFICATION OF VOLUNTARY MOVEMENTS

Voluntary movements evolve out of reflex movements and reaction movements. Here let us learn the ways in which voluntary movements are classified. This will also show us the various involuntary movements.

4.6.1 Individual and whole-body movements

In this classification voluntary moments are classified on the basis of whether a part of the body or the whole body is in motion. All voluntary movements involve the entire body is some way or the other. Yet, the movements are differentiated as `Individual Movement' and `Whole body movement'.

Individual Movement refers to such movement in which the entire body remains in more-or-less a static posture and only the limbs-arms and/or legs are in motion. Examples of individual movement are drinking from a glass, throwing a ball, playing carroms.

These are further divided into `**Unilateral movement'** and `**bilateral movement'**.

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In unilateral movement limb of only one side is in motion e.g. opening a top or kicking a ball. In bilateral movement both arms or both legs are in motion e.g. folding a tablecloth.

Whole body movements refer to such movements in which the entire body is in motion. Examples of whole body movement are walking, hopping and rolling.

These are further divided in **successive movement** or **sequential movement** and **simultaneous movement.** In successive or sequential movement different parts of the body are in motion one after the other in a sequence e.g. in walking, one leg moves after the other in an alternate succession or sequence. In simultaneous movement all the parts of the body are in motion at the same time e.g. jumping from a table to the floor.

4.6.2 Gross motor and fine motor movements

In this classification the voluntary movements are classified on the basis of demands they make on the components of the action involved in the movement. Components of action are; locomotion, body-balance, strength, control, coordination, prehension, object-manipulation and precision. Accordingly movements are categorized as gross-movements (or gross motor) and fine movements (or fine motor). Please refer to Table 1 for understanding the difference between gross motor and fine motor.

GROSS MOTOR SKILLS AND FINEMOTOR SKILLS

In literature the terms gross-motor and fine motor are preferred to the terms gross-movement and fine movement. Accordingly skills relating to motor aspects are denoted by the terms **gross-motor skills**, which require gross movements, and fine motor skills, which require fine movements.

TABLE - 1 : A COMPARISON OF GROSS MOTOR AND FINE MOTOR

Component of action	Gross-motor skills	Fine motor skills
ocomotion	Likely	Not likely
Body balance	More demand	Less demand
Strength	More demand	Less demand
Control	Spread to several muscles	Directed to a few muscles
Coordination	Average demand	More demand

Prehension	Average demand	More demand
Object manipulation	Less demand	More demand
Precision	Less demand	More demand
Some examples	Wearing a shirt	Buttoning a shirt
	Pulling wheeled toy	Threading beads
	Kicking football	Playing marbles
	Painting a wall	Writing on paper
	Mopping floor	Applying gum
	Riding a bicycle	Winding a spring toy

4.6.3 Movement according to qualities

In this classification the voluntary movements are classified on the basis of combinations of movement qualities. These movement qualities are proposed by Laban. Laban established the movement theory in England. The combinations of movement qualities determines the class of movement to which a movement belongs. Please refer to Table 2 for understanding this classification.

TABLE - 2 : CLASSIFICATON OF MOVEMENTS ACCORDING TO LABAN'S MOVEMENT THEORY

Class of movement	Combination of qualities
Punching (thrusting)	Strong, controlled, directed and sudden action
Floating	Gentle, less controlled, flexible and slow action
Gliding	Gentle, controlled, directed and slow action
Hitting	Strong, less controlled, directed and sudden action
Pressing	Gentle less controlled, directed and slow action
Wringing	Strong, controlled, flexible and slow action
Flicking	Strong less controlled, directed and sudden action
Dabbing	Gentle, less controlled, directed and sudden action

Note: Each classification has its relevance and significance.

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The individual and whole body classification is helpful in understanding how movements occur, how motor aspects develop and how a child learns movements and posture.

The Gross motor and fine motor classification is useful when planning and implementing educational programmes for children with special needs.

The classification based on Laban movement theory is significant when planning sports, dance and drama for children with special needs.

4.7 DISORDERS LEADING TO DIFFICULTIES IN GROSS MOTOR AND FINE MOTOR ACTIONS

Observe students (children) in special school and the difficulties in motor actions in different children. Write down the difficulties on a separate sheet of paper.

You may have noted down some of the following difficulties in motor actions.

1) The child is unable to hold his head high-it hangs down and touches the chest.

2) The child is not able to sit without support.

3) The child is not able to catch a ball thrown at him.

4) The child cannot hop on one leg

5) The child is unable to hold a pencil properly.

6) The child does not take weight on his leg i.e. does not stand

7) One arm of the child is flexed (bent inside) at the wrist and the child does not bend the knee of the same side as his affected arm, when walking.

8) The child is unable to walk.

9) The child is not able to pour water from a jar into a jar.

10) The child is unable to use a pair of scissors

There are many more difficulties. All the difficulties can be understood well if a little time is given for learning what disorders occur, in the mechanism of motor action, which lead to difficulties or even absence of motor action. It will be easier to learn about the disorders in each system separately.

4.7.1 Disorders of the skeletal system

Disorders of the skeletal system always affect the mobility at a joint (Range of Motion). It also affects the action of the muscle because muscles are attached to the skeletal system. The disorders are;

Amputation: In this disorder, the skeletal structure itself is absent. Thus the child may not have a full arm or leg or a part of the arm or leg. The amputation maybe congenital i.e. deficit from birth or can be caused by a physical accident in later life.

1   Fracture: In this disorder the bone gets broken, slightly or fully. In a condition known as "Brittle Bones" (technical name `Osteogenesis Imperfect') often associated with mental retardation, the bones have a tendency to get fractured upon slightest pressure on the bones.

2   Dislocation of Joints: In this disorder the joint does not remain in its natural alignment. It slips into unnatural positions of alignment. This is a common disorder amongst children with Downs Syndrome. In them it is usually the hip joint, which gets dislocated because of imperfect growth of the structure of the joint.

3   Deformity: This disorder occurs either in a bone or in a joint. In this disorder, the shape of the bone is not in the natural normal manner. Deformity in a bone may be present congenitally or may occur owing to fractures and also malnutrition. Deformity in a joint occurs because of disorders of the muscles acting on the joint or due to injury to the joint. Deformities commonly seen in children with mental retardation are listed in Table 3.

TABLE - 3 : CONTRACTURES AND DEFORMITIES COMMONLY SEEN IN CHILDREN WITH MENTAL RETARDATION

No	Location	Contracture	Deformity
1.	Skull	Small size	As in Microcephaly
2.	Skull	Large size	As in Hydrocephaly
3.	Vertebral Column	Kyphosis (bending forward)	
4.	Vertebral Column	Lordosis (bending backwards)	
5.	Vertebral Column	Scoliosis (bending sidewards)	
6.	Upper limb	Shoulder Flexion & internal – rotation As in Erb's palsy	

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No	Location	Contracture	Deformity
7.	Upper limb-elbow	Extension As in Erb's palsy	
8.	Upper limb-elbow	Flexion as in Cerebral palsy	
9.	Upper limb-wrist	Flexion	Wrist drop (as in Cerebral palsy)
10.	Upper limb-fingers	Flexion involving metacarpal joints (as in Cerebral palsy)	
11.	Lower limb-hip	Adductor Spasm as in Cerebral Palsy	
12.	Lower limb-hip	Flexion, Adduction, internal rotation (as in Cerebral Palsy)	
13.	Lower limb-knee	Flexion (as in Cerebral Palsy)	
14.	Lower limb-knee		Jenu Varum/Bowleg
15.	Lower limb-knee		Jenu Valgum/Knock Knee
16.	Lower limb-knee		Jenu Recurvatum Hyperextension at knee
17.	Lower limb-ankle	Teudo-Achilis tightness	
18.	Lower limb-foot		Pes Planus/Flat foot

4.7.2 Disorders of muscle system

1. Wasting: In this disorder the muscle becomes smaller in size (not length) and is soft and flabby to feel.

2. Wasting with fibroses: Here, the muscle becomes smaller in size (not length) but is hard to feel and is also non-elastic.

3. Contracture:. In this disorder the muscle becomes permanently shorter in length. If the shortened muscle can be stretched to its original length it is a stretchable contracture. But if the shortened muscled cannot be stretched passively to its original length then it is a fixed contracture.

4. Pseudo-hypertrophy:. Here the muscle becomes large in size. This is known as `pseudo' hypertrophy because unlike in the real hypertrophy, in

which the muscle is large as well as strong, this increase in size is not accompanied by increase in strength of the muscle.

DISORDERS OF MUSCLE TONE

1. Spasticity : In this disorder the tone of the muscle is increased. There is hypertonia of the muscles. The increased tone in the muscle is experienced right from the beginning of the movement and it goes on increasing progressively as the movement proceeds through the range of motion of the point. This is so because spasticity is a stretch-sensitive pathology i.e. if you pull the muscle more the hypertonia will become more.

    When there is spasticity, the voluntary contraction of the muscle takes place very quickly so the movement takes place very rapidly. In spasticity, though there is more readiness to contract, the control over the movement is poor because the action is rapid and the action cannot take place against any resistance because of stretch-sensitivity.

2. Rigidity: This is also a type of hypertonia. The increased tone is generally experienced through the movement. There are variations too in rigidity. Rigidity is not stretch-sensitive.

    In rigidity the voluntary contraction of the muscle takes place a little quickly but the movement does not take place rapidly. Though there is more readiness to contract the control over the movement is poor.

3. Flaccidity: This is a type of hypotonia. The decreased tone of the muscle is experienced throughout the movement. In flaccidity the control over movement is poor because of sluggish/delayed contraction of the muscle.

    There is only one type of variation in **muscle power** or strength, namely, weakness. If the weakness is partial it is known as paresis (grade 1 to 3). If the weakness is complete it is known as paralysis (grade 0).

4.7.3 Disorders of nervous system

Differentiating between disorders of muscle system and disorders of nervous system becomes a difficult exercise. This is so because the effect of the disorder of nervous system is mainly manifested by dysfunction in the muscle. Even while describing a disorder of nervous system, the symptoms mentioned will refer to muscles.

The specific disorders of nervous system which we need to know more about are of two types; those occurring in the motor pathways and those occurring in the cortico-subcortical relay network.

4.7.3.1   DISORDERS IN MOTOR PATHWAYS

As seen earlier, there are two types of motor pathways; the first type which are located entirely within the central nervous system and the second type which leave central nervous system to enter the nerves of peripheral nervous system.

Any disorder caused by a lesion (i.e. injury) or pathology to the first type of motor pathways is called upper motor neuron (UMN) lesion disorder. While, disorder caused by a lesion or pathology the second type of motor pathways is called lower motor neuron (LMN) lesion disorder. The effects of UMN lesion and LMN lesion are different. They are elaborated in Table-4.

TABLE 4 : SYMPTOMS OF UMN AND LMN LESIONS

UPPER MOTOR NEURON LESION	LOWER MOTOR NEURON LESION
Weakness or paralysis in muscles	Weakness or paralysis in muscles
Increase in muscle tone (spasticity)	Decrease in muscle tone (Flaccidity)
Involuntary movements may be present	Absence of involuntary movements
No muscle atrophy	Muscle atrophy with muscle wasting
Contractures possible to set in shortly	Contractures may set in later

4.7.3.2 Involuntary movements

In the context of disorders of neurons system, involuntary movements are those movements which are actions of skeletal or voluntary muscles but which happen without the volitional control of the person. They take place even when the person does not really wish to have them.

1)   Tremors: These are involuntary movements in which opposite group of muscles contract and relax alternately, repeatedly and rapidly causing shakiness and unsteadiness. Tremors may occur in gross-motor form e.g. entire trunk shaking (as in Ataxia- a type of cerebral palsy). They may occur in fine motor form i.e. only neck, or arm, or fingers shaking (as in a condition called Parkinsonism).

2)   Clonus: Like tremors, clonus also has alternate, repeated and rapid contractions and relaxations of opposite groups of muscle. The main difference is that clonus gets activated when a muscle is over stretched beyond its usual limit of stretch.

3)   Dystonia: These are involuntary movements occurring because of sudden changes in the tone of the muscles. A muscle which has a normal tone

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which is not doing any action, shows unevenly increased tone when the action begins. Thus the movement becomes, uneven, jerky and is not coordinated. There are two variations in these.

Athetoid movements. These are slow and writhing involuntary movements happening in wrist and hand. There is no definite pattern of involuntary movement.

Choreoid movements. These are jerky and rapid involuntary movements happening in shoulder, elbow or neck and face. There is no definite pattern of involuntary movement.

4.8   GROSS AND FINE MOTOR IMPAIRMENTS

4.8.1   Mental retardation and motor development

As we have seen earlier motor development is a process. During this process, the child actually learns to overcome the regimental motor actions i.e. movements and postures, occurring due to reflexes and reactions. The outcome is that the child masters voluntary control of the movements and postures required for doing various gross motor and fine motor actions. Further on i.e. once having mastered the movements and posture, the child is able to store the required set of messages in an automated format. This make it easy to carry out the required motor actions skillfully and without spending unnecessary energy. Incase there is any obstructions in this progression from the stage of reflex to the stage of volition, there occurs a gross-motor or fine motor impairment.

Children with mental retardation have a central nervous system, which is not properly (age appropriately) matured and/or is damaged. Owing to this, two functions are affected.

1)   neurophysiological function of transmitting sensory and motor impulses through their proper pathways.

2)   Cognitive function of differentiating contraction of different muscles and of learning to perform the right movements.

Hence gross motor and fine motor impairments are prominent in children with mental retardation. This is further compounded if there are disorders of skeletal system and muscle system accompanying the poorly matured and/or damaged central nervous system.

GROSS MOTOR SKILLS REQUIRE

1)   voluntary control over larger muscles

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2)   action over several and mainly large joints

3)   changes in body postures

4)   participation of more parts of the body

Examples of gross motor actions are, turning head, rolling, coming to sitting position, sitting, crawling, creeping, pulling to standing, standing, walking, running, hopping, kicking, throwing, jumping, cycling etc.

FINE MOTOR SKILLS REQUIRE

1)   voluntary control over smaller muscles

2)   action over fewer and mainly smaller joints.

3)   maintenance of a certain posture over a longer period of time

4)   participation of fewer parts of the body

Examples of fine motor actions are movements of the eye, movements of the tongue, manipulation of object with fingers, grasping objects with thumb and fingers, grasping objects with fingers only, using instruments like brush, pen, pencil, scissors, screw-drivers, making tower of blocks, fastening buttons or hooks etc.

Between gross-motor and fine motor, children with mental retardation learn gross motor actions earlier than fine-motor actions. This is so because gross motor actions make lesser demand on certain aspects of movements than fine-motor action. (Please revise table 1 showing difference between gross motor and fine motor skills.

So far, we have learnt how gross motor and fine-motor actions are impaired in children with mental retardation. The impairments are seen in neuromotor, sensory-motor and eye-hand coordination difficulties.

1.8.2   Neuromotor difficulties

Neuromotor difficulties arise owing to general structural weaknesses in the central nervous system of children with mental retardation. Here the central nervous system does not develop in a manner, which facilitates the progression from the reflex stage to automation stage. As a result, in children with mental retardation the following neuromotor difficulties are observed.

1)   Persistence of reflexes

2)   Delay in appearance of reactions

3)   Delay in integration of reflexes and reactions

4)   Inability to learn volitional control over muscles

5)   Inability to shift learned movement into automated movement.

These neuromotor difficulties affect gross motor as well as fine motor actions. Maintenance of body-balance and of body-posture, which are the most fundamental gross motor actions are fully affected.

Owing to these neuromotor difficulties the children with mental retardation either

1)   do not do any movement voluntarily (incase of profound and severe mental retardation)

2)   do movements voluntarily but in generally abnormal pattern (i.e. too fast or too slow) and in a clumsy manner (incase of severe and moderate mental retardation).

3)   do movements voluntary but accomplish them at a later age than normally expected (incase of moderate and mild mental retardation).

4.8.3 Sensory-motor difficulties

One factor about motor actions which has not been highlighted so far is that of the role played by sensory inputs. Sensory input has an important role to play in the planning of motor actions and hence in the development of motor skills.

In order to master control over movements and posture, brain has to receive information from various sensory organs. With the help of this, it can plan the motor action. This is called motor planning. Motor planning involves

1)   Generating an idea of the motor actions required in doing a task for the first time (e.g. a child sees another child sliding down a garden slide – input from visual sensation).

2)   Sequencing the parts of the action (e.g. the child attempts to climb the steps, sit on top of the slide and let go himself down the slide – input from tactile, proprioceptive and vestibular sensation.

3)   Executing the sequence repeatedly until it is done smoothly and efficiently (e.g. the child climbs the steps and slides down again and again until he has mastered exactly how to execute the actions without hesitating or being afraid of. – input from tactile, proprioceptive and vestibular sensations).

Input from three basic senses viz. touch (tactile) movement (proprioceptive) and position (vestibular) is critical in the development of motor planning. In addition, input from visual and auditory senses is also helpful. These sensory inputs help the brain to;

1)   monitor an action with the feedback from senses.

2)   control postures so that action is effective

3)   coordinate both sides of the body

4)   maintain balance of the body.

This leads to development of sensory perception, cognition, language and emotional stability.

It is to be noted that body-balance and body postures are as much as sensory-motor function as they are neuromotor functions. This is so because balance and postures, which are at one stage maintained by reflexes and reactions, are later required to be maintained volitionally with the help of sensory inputs.

PROPRIOCEPTIVE SENSATION

Proprioceptive sensations the sensation emerging from the tightness of a contracting muscle. Hence it is also known as muscle sense.

It tells the brain

1)   When and how the muscles are contracting and stretching.

2)   How much force the muscles are using

3)   What is the speed, timing (duration) and frequency of the movement at a joint.

4)   What are the other body parts doing

Sensory-motor difficulties are difficulties which arise owing to dysfunction in processing the sensory input may be global i.e. affecting all sensory inputs or may be specific i.e. affecting any one particular sensory input. The cause for such dysfunctions to occur can be

1) absence of sensory receptors. E.g. blindness and deafness. This situation is likely only in case of visual or auditory sensation.

2) Delay in maturation of central nervous system

3) Poorly developed sensory receptors

4) Lesions in sensory pathways; those from sense organ to brain centers, those from one sensory center to another sensory center in the brain and those

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VESTIBULAR SENSATION

Vestibular sensation is the sensation emerging form vestibule, structure/organ existing in the inner ear.

It tells the brain

1) Where one is in relation to gravity

2) Whether one is moving from place to place, at one spot or not moving at all.

3) How fast and in which direction is the body moving

4) How much space is available for the body and its movement.

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connecting sensory areas of brain with the motor areas of brain.

Whenever there is sensory-motor difficulty the brain is unable to;

1) plan how to carry out an action

2) get a feedback whether the action is being carried out properly and effectively.

Examples

In children with Downs Syndrome, the tone of muscles is low. Hence the sensation emerging from the muscles (proprioception) is not effective enough for the brain to process. Hence when performing the action of reaching an object a young child with Down Syndrome may reach his hand beyond the actual object. Instead of deftly reaching the object. He may attempt again and reach the object because his brain gets information from visual sensation that the action was not correct. The other three basic senses are not sufficient to give the feedback.

1. A child with mental retardation creeps under a bed to get a ball or a toy from there. His brain does not process information that comes from tactile sensation, that under the bed his body must remain in the same horizontal position when coming out from beneath the bed. He gets up suddenly and hits his head and back under the bed.

4.8.4   Eye-hand coordination difficulties

Amongst all the sensory inputs received by the brain, the ones received from the eyes i.e. from visual sensation are extremely vital. Human beings have become totally dependent on information coming in through visual sensation. This is so because,

1) human being have a sensitive and binocular vision. Owing to this, human vision can sense a visual stimulus in three dimensions i.e. length, breadth and depth.

2) Sensations emerging from tactile, proprioceptive and vestibular areas that depend on the movement is taking place. But visual sensation is an independent sensory channel. It can track the movements in the limbs, especially those in the arm and hand, on its own initiative. Thus it can give, to the brain, objective information on the movement, which it is observing.

Thus, eyes take over an independent function of monitoring movements of the hand. For effective monitoring, a high degree of coordination is required between the movements of the hand and those of the eyes. Both are fine-motor movements. This coordination is known as eye-hand coordination.

Seeing the object in the hand, the hand itself, the movements of the hand and the product of the hand movements are important requirements of the coordination between the eye and the hand. A child starts seeing the hand and the object together from the age of one month owing to a reaction called Asymmetrical Tonic Neck Reflex (ATNR). Steady fixation of vision on the hand and the object develops at the age of two months. The progress of eye-hand coordination is slow until grasping develops fully at the age of one year. Thereafter the steady fixation on the

movement and the product of hand movements develops rapidly. Eye-hand coordination is estimated to be fully developed by the age of seven and a half years.

Eye hand coordination difficulties are those arising out of poor coordination between the movements of the eyes and those of the hands. This incoordination can be the result of

1) blindness or low vision

2) paralysis or weakness of muscles of the eyes (ocular muscles)

3) paralysis or weakness of the muscles of arm and/or hand.

4) involuntary movements in arm and/or hand,

5) atypical body positions, which occlude the ability to see the hand, its movements and their product. For example, when a left-handed person writes from left to right, his own hand goes on covering whatever he has written on the paper.

Children with mental retardation have, as seen earlier, impairments of gross-motor and fine-motor actions. Hence controlling muscles of eyes as well as those of the hands at the same time becomes very demanding, and often not done. Secondly children with mental retardation get distracted by other visual stimuli thereby, are unable to focus vision only on actions of the hand. Thirdly, when learning from a teacher, a child with mental retardation is keen to observe teacher's feedback. Hence it tends to look more often towards the teacher's face for a response. In so doing, the child does not visually monitor its hand movements.

4.9   LOCOMOTOR/MOBILITY RELATED PROBLEMS

Hand functions and locomotor functions are two most developed motor actions, besides of course speech, in human beings. These are a set of movements which carryout these functions are the true movements which actually enable human beings to explore the physical environment tend adapt to it. Persons with mental retardation, as we have understood so far, have difficulties in learning gross-motor and fine-motor actions. Hence they often face problems in accomplishing the two functions viz. hand functions and locomotor functions. Therefore it is essential to know about the problems relating to these two functions.

1.9.1   Hand functions and mobility

In case of children with mental retardation, there is a possibility of two types of problems relating to hand functions,

1. general delay in the development of hand functions.

2.   hand functions affected by the impairments of the structure of the hand.

In case of delay, the child develops a functional grasp which is unlike the more standard grasps, which develop in normal children. The atypical functional grasps may help the child with mental retardation to do some functions of the hand. But the grasps itself is not very reliable and effective. It is clumsy and awkward.

The second type of problems are owing to, absence of fingers and/or thumb, extra fingers and/or misplaced thumb, deformities of bones and/or joints of hand, paralysis, weakness or contractive in muscle of hand, shortening of ligaments and soft tissues of the hand and persistence of grasp reflex.

1.9.2   Mobility related problems

Locomotor or mobility entails gross-motor actions which cause the body to move from one place to another. Human beings are supposed to be bi-pedal i.e. able to walk on two legs. But bi-pedal locomotion is a complex movement. It involves;

1)   bearing body weight on one leg and shift it alternately to the other leg.

2)   Doing alternate reciprocal movement of each leg in a coordinated and rhythmic manner.

3)   Maintaining the equilibrium of the body i.e. body balance when the body is moving.

As bipedal walking is complex, locomotion develops through phases. These phases are,

1) Rolling over

2) crawling and creeping

3) hitching on bottoms

4) walking

Locomotion demands a great deal of neuromotor and sensori-motor functioning. As seen so far, children with mental retardation have difficulties in these functions. Hence they also show problems in progressing through the phases of locomotion.

As in the case of problems relating to functions of hand, there is a possibility of two types of problems of locomotor/mobility function, viz.problems due to general delay in development and problems due to impairment in the structure of the legs.

In both types either there is a functional mode of locomotion or no locomotion. Functional mode of locomotion may include any form of locomotion below the level of bi-pedal walking.

4.10 UNIT SUMMARY : THNGS TO REMEMBER

All animals, including human beings, adapt themselves to the demands made upon them by the environment with the help of motor functions.

The skeletal system provides levers because of which a wide variety of motor actions can be performed. Muscle System `provides' the action to bring about the motor movements with varying degree of force. The nervous system provides the coordination between action of all the muscles involved in carrying out the motor action. Thus, a motor action eventually takes place in a precise and most effective manner.

Motor actions include movements and postures. There are different types of movements and postures. Control over movements and postures develop through a sequence of stages; Reflex stage, Reaction stage, Volitional stage and Automation stage. The development of control also follows certain fundamental principles.

Disorders of skeletal system, muscle system and nervous system lead to difficulties in Gross-motor and Fine-motor actions. There are various conditions causing disorders in these systems. In mental retardation motor development is affected owing to poor maturation and/or damage of central nervous system. Motor development related problems are compounded if, besides disorders of central

nervous system, there are associated disorders of skeletal system and/or muscle system in a child with mental retardation.

Children with mental retardation display gross motor and fine motor problems owing to Neuromotor difficulties, Sensori-motor difficulties and eye-hand coordination difficulties. Functions relating to hand and locomotion are the most commonly affected motor skills in children with mental retardation.

4.11 CHECK YOUR PROGRESS

1.   Explain in few words

    (a) Motor pathways

    (b) Spasticity

    (c) Involuntary movement

    (d) Eye-hand coordination

    (e) Bipedal locomotion

2.   Distinguish between

    (a) Movement and posture

    (b) Contractures and deformities

    (c) Reflexes and reactions

    (d) Inactive postures and actives postures

    (e) Neuromotor difficulties and sensori-motor difficulties

3.   Describe in brief the roles of skeletal system, muscle system and nervous system in movements and postures.

4.   Discuss how motor development is affected in mental retardation.

5.   Discuss what Motor Planning is and how it takes place.

6.   Describe how various muscles act when a movement is taking place.

7.   Explain the relationship between Volitional movement and Automated movement.

8.   Explain the problems relating to functions of hand.

4.12 ASIGNMENTS / ACTIVITIES

1.   Observe several normal infants (between age 15 days and 15 months) and list whichever movements they attempt to perform with their arms and hands.

2.   Observe several normal infants (between age 6 months and 24 months) and list whichever methods thy use for moving their body from one place to another (locomotion)

3.   Observe and list gross-motor and fine-motor difficulties in children with mental retardation.

4.   Select any day-to-day activity involving motor action and do it repeatedly in slow motion. Feel the movement in the joints involved, the contraction in the muscles involved and the sensations, which your brain receives when the movement is taking place.

4.13 POINTS FOR DISCUSSION / CLARIFICATION

After going through the unit you may like to have further discussion on some points and clarification or other. Not down those points below.

4.13.1 POINTS FOR DISCUSSION

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1.13.2 POINTS FOR CLARIFICATION

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UNIT 5: IMPLICATION OF PRE- SCHOOL AND PRIMARY LEVELS FOR INTERVENTION, DOCUMENTATION, RECORD MAINTENANCE AND REPORT WRITING

STRUCTURE

- o **Introduction**
- o **Objective**
- o **Role of therapeutic intervention**
- o **Therapeutic intervention**
  - Inhibiting primitive reflexes
  - Facilitating automatic reflexes
  - Use of Assistive devices
    - Use of walkers
    - Use of crutches
    - Use of canes
    - Use of wheelchair
  - Acquisition of self-care skills
    - Feeding
    - Adaptation in bathroom and toilets
    - Dressing
  - Activities
    - Gross motor activities
    - Fine motor activities

- o Mentally retarded children with motor problems in regular classrooms
- o Guidelines for teaching motor skills
- o Meeting educational needs
- o Unit Summary
- o Check your progress
- o Assignment/activity
- o Points for discussion/classification
- o References/further reading

5.1 INTRODUCITON

In the last unit you have learnt that delay in motor development occurs because of persistence of primitive reflexes and delay in the attainment of the automatic ones. You have also learnt that the three elements (which are tone, control and strength) are basic building blocks for all motor activities. It is the abnormality in these three elements that underlies motor problems seen in retardation. Treatment procedures including (physiotherapy and occupational therapy) can help the child attain automatic reflexes. Sometimes assistive devices are used to help the child function as independently as possible. Activities are also planned to facilitate the child to learn skills and functions in which he is lacking. In this unit you will find how physiotherapy and occupational therapy help to enhance motor functions.

5.2 OBJECTIVES

After going through the unit you will be able to

- state the objectives of therapeutic intervention i.e. role of physio and occupational therapists.

- describe how physiotherapists can help the child in inhibition of primitive reflexes and facilitation of automatic reflexes

- narrate what kind of assistive devices can be used as an aid to ambulation and also how to help the child to use these assistive devices.

- state how a child is helped to acquire self-help skills.

- give information on designing various activities to enhance gross and fine motor skills in children and adults.

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- appreciate the therapeutic programmes and their incorporation in teaching classroom activities.

- show awareness of the guidelines for classroom management of motor problems in regular and special schools.

5.3   ROLE OF THERAPEUTIC INTERVENTION

Occupational therapists and physiotherapists play a big role in helping children in developing motor skills. They are as follows:

1.   To stimulate the normal development sequence as closely as possible.

2.   To create a therapeutic environment that is conducive to nurture optimal development of motor abilities with other areas of function.

3.   To prevent or minimize the possible effects of inactivity and motor deficits on the rapidly developing muscles and bone structure.

4.   To help the child develop a proper posture as it ensures;

    1.   better body alignment

    2.   avoidance of pressure sores

    3.   increase in the child's ability to move with greater care and attention

    4.   ability to do tasks independently, thus increasing self esteem and motivation

5.   To help the child develop functional motor skills

6.   To help the child in attaining automatic reflexes by inhibiting primitive reflexes.

7.   To help the teachers by providing them the various activities, which will help enhance gross and fine motor skills in children.

8.   Use of therapeutic devices i.e. crutches, canes and wheelchairs to facilitate movement and by suggesting devices for self help skills.

9.   Working with families in both home and school settings to implement therapeutic programmes.

In working with infants and young children, there is considerable overlap in the roles of physio and occupational therapist. In working with older children and adults, the physiotherapist is usually concerned with large muscle movement and gross motor activities, while the occupational therapist is more often involved in evaluation and treatment of fine motor functions and activities of daily living.

5.4   THERAPEUTIC INTERVENTIION

Therapeutic intervention helps in the following ways.

5.4.1   Inhibiting primitive reflexes

When the child not only is dominated by primitive reflexes but has not yet developed any automatic ones, treatment involves inhibition techniques.   These are intended to reduce heightened muscle tone,   thus making it easy for management.

The two reflexes that are most often modified by inhibition are the asymmetric tonic neck reflex and tonic labyrinthine reflex. Fig.A.

(a)   In **the asymmetric tonic neck reflex,** turning of the child's head to one side results in the extension of the arm on that side and flexion of the other arm. This produces the commonly seen "fencing" position.   This reflex can interfere with self-feeding training because if the child turns its head to look at the hand that is holding the food, the hand moves away (extends) rather than moving toward the mouth (flexes). This reflex is less in prone posture. It also has no effect when the head is in the midline.
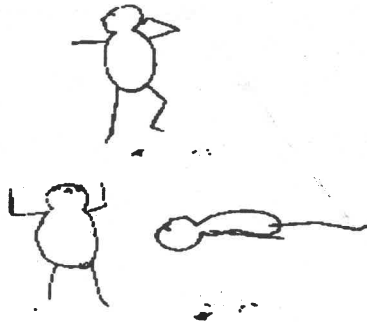

Fig- A : Primitive tonic reflexes

Physiotherapy helps in flexing the head, thereby relaxing or inhibiting the extensors.

(b)   **The tonic labyrinthine reflex** causes the child to assume an extensor posture while lying on his back (head arched back) and flexion posture while lying on his stomach. In either position the reflex interferes with attempts to raise the head. In the normally developing infant, this reflex loses its influence between 1 and 3 months, thus permitting the lifting of the head from prone (lying on the stomach) at 1 month and from supine (lying on the back) at 2-3 months (Johnston 1976). Here also the effect of this reflex in the supine position can be lessened by flexing the head. It is also ceased by placing the child in a side lying position or when held or supported in a position of flexion.

You have just learnt that if the child is dominated by primitive reflexes what difficulties he faces and how he can be helped. Now let us look at facilitating automatic reflexes.

5.4.2   Facilitating automatic reflexes:

If some automatic responses are present to some degree, they can be facilitated through proper handling techniques. The procedures employed reflect application of the behaviour principle of "successive approximation". Head-righting reactions (keeping head erect without support) can be strengthened by freeing the head from external support while simultaneously providing support at the shoulder girdle. When head-righting reactions are well developed, equilibrium reactions of the trunk in the sitting position are fostered by providing support at the next lower level, below the shoulder girdle. As the level of external support moves down the trunk, the child is required to use more and more equilibrium responses to maintain an erect position.

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250   MENTAL RETARDATION
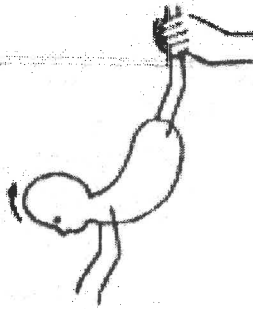
Head righting reflex. There is an attempt to maintain the head in such a position that the face is vertical and the mouth is horizontal to the ground.
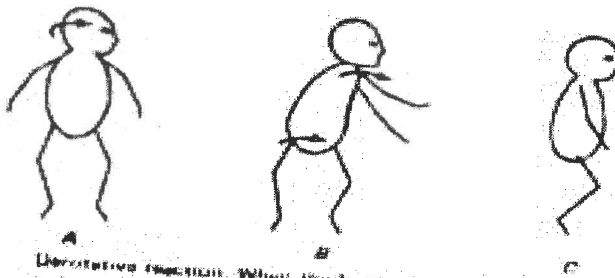
Derotative reaction. When the head and neck are rotated (A) there is a segmental sequence of movements from the shoulder, trunk, and legs (B) to "derotate" the body and maintain normal alignment (C).
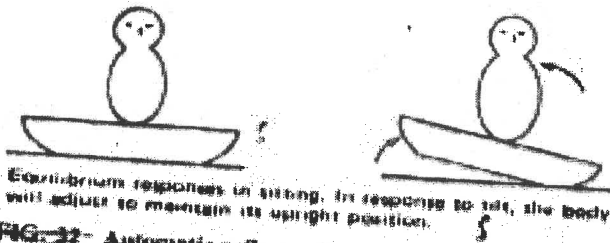
Equilibrium responses in sitting. In response to tilt, the body will adjust to maintain its upright position.

FIG. 22   Automatic reflexes. From Johnston (1976).

Similarly, equilibrium reactions are facilitated when in sitting, crawling or standing by either gently or slowly tilting the child or by slowly moving the support on which the child rests. As the automatic responses mature, the amount of inhibition of primitive reflexes necessary to permit these positions is gradually reduced.

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Techniques of inhibition and facilitation should be a part of the home management program. This will involve suitable instruction to the parents in carrying, lifting, holding, bathing, dressing, feeding and positioning.

5.4.3 USE OF ASSISTIVE DEVICES

Along with physiotherapy in certain cases, depending on the need, aids and assistive devices are employed to help children function as independently as possible. The child who is unable to learn to walk freely may be helped to use,

1. Walker
2. Crutches
3. Cane
4. Wheelchair

5.4.3.1 Use of walkers

There are several types of walkers. The infant walker is designed for children from 1 ½ to 4 years of age. The child walker is for children from 2 to 8 years who are not expected to be ambulatory in future.
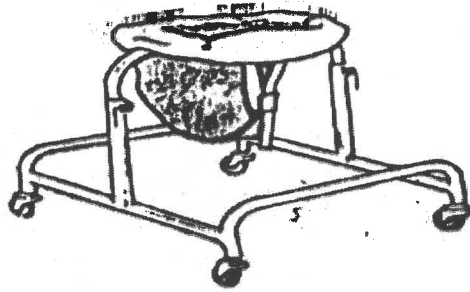
Figure 9. Infant walker.
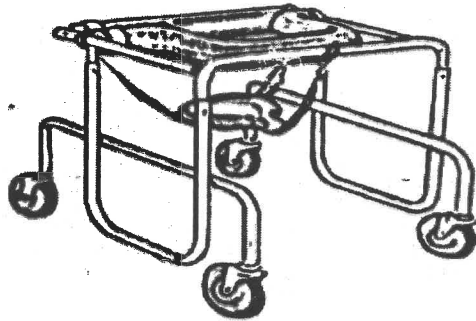

Figure 10. Child walker.
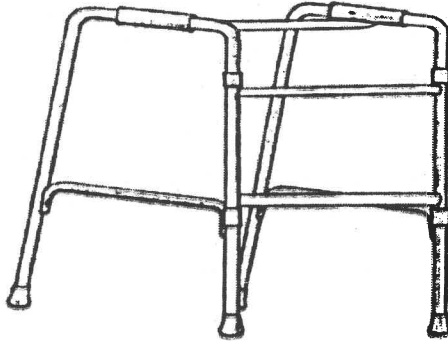
Figure 11. Adult walker.

INSTRUCTIONAL ACTIVITIES

1. Place a rattle or a toy of the child's choice on a chair in the corner of a room. Tell/gesture the child who is using an infant walker to move across the room and retrieve the toy. Then ask him to bring it to you.

2. Tell/gesture the child in an upright walker to follow a group of cardboard arrows that have been placed on the floor.

3. Play a "retrieval" game. Tell the child to move forward in the walker to retrieve a toy or object from a chair.

5.4.3.2 Use of crutches

Crutches are used to increase balance and stability as well as to reduce or eliminate stress on weight bearing joints. Basically they compensate for loss of muscle control. However any assistive device should be used only after the appropriate medical consultations.

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For ice

Regular

Figure 43. Crutch/cane tip adaptation for walking on ice.

Fig E.

Figure 42. Axillary crutch.

Fig D

Figure 44. Tripod gait.
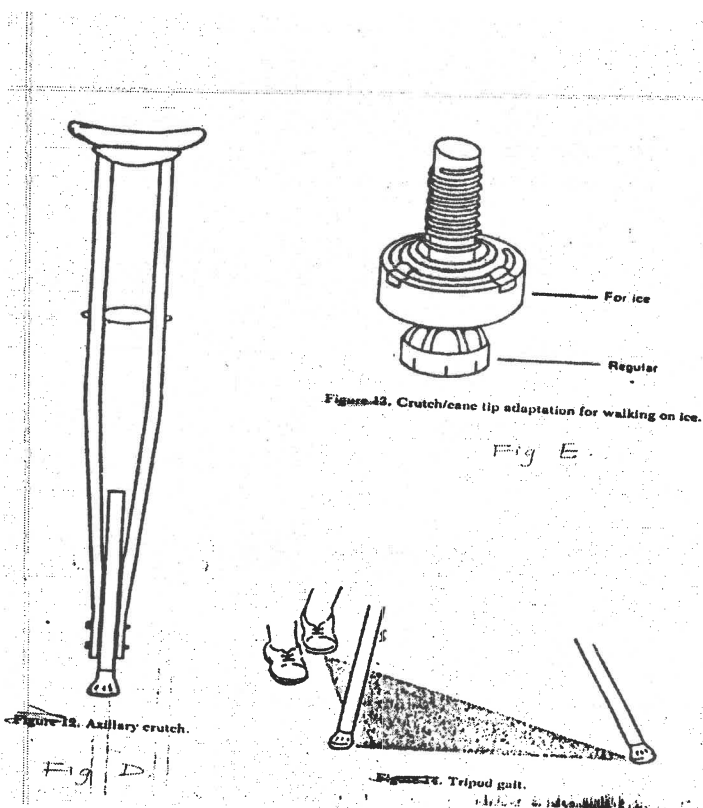
INSTRUCTIONAL ACTIVITIES

1. Show the child the four-point gait. This gait offers maximum support because there are always three points of contact with the ground. The cycle for the child to follow is (1) right crutch forward (2) left foot forward (3) left crutch forward and (4) right foot forward. Assist the child in practicising this gait pattern.

2. When appropriate, tell the child to practise going from one end of the room to the other using two-point gait. This requires the child to be able to balance on one leg and involves a significant amount of skill.

3. At home, take the child to a community event such as holi celebrations or Diwali Mela. Assist him when necessary. Wait until he is ready and moves independently with crutches inside the house before you take him out.

2.4.3.3 Use of canes

Canes provide less support than crutches. Some canes are weighted with lead to provide added stability but most are not. Canes are of various types e.g. wood, aluminum, Tripod cane and so on.

Instructional activities

1. Indicate to the child that he should walk towards you using his cane. Indicate that he should bring the cane and affected leg forward simultaneously and then bring the unaffected limb forward. Practice with the child and correct him when this sequence is not followed.

2. Place empty paper cups next to the `x' marks on the floor. Plan a game in which the children walk to each `x' and pick up the empty cup. The child with the maximum cups at the end of a time limit wins the game and should be rewarded.

3. In the community, take the child to a street where there is a high curb. Tell him to step up on the curb the same way he climbed stairs.

5.4.3.4 Use of wheelchair

When wheelchair is prescribed by the doctor, it should be judged for its durability, strength, size and weight. It should fold easily and have replaceable parts and accessories.
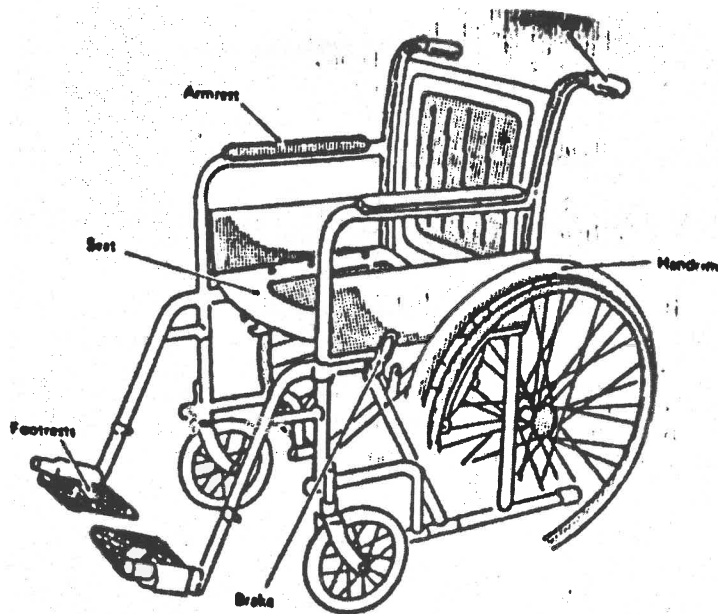
Instructional activities

1.   First practise by yourself how to unfold and fold a wheelchair. Show the child how to unfold a folded wheelchair. Practise.

2.   Show the child to close the wheelchair. First check to see if the arms are locked. Fold up the footrests. Make a fold in the seat from above or below. If above, pull up, closing the chair. Assist the child in carrying out each of the steps.

3.   Show the child how to use his wheelchair seat belt.

4.   Ask the child in a wheelchair to wheel the chair a very short distance. Show the child how to lock and unlock the brakes of an empty chair.

5.   Stand behind the child and call him to come to you in a backward movement. Show the child how to make turns in his wheelchair. Also show how if the child is in bed, can be transferred to wheelchair. Supervise all the actions till the child is independent. Use various prompts suitably and fade support gradually.

5.4.4   Acquisition of self care skills

The focus of occupational therapy is to help the child acquire basic self-care skills by reducing the motor problems.   Attention should be particularly directed to feeding, toileting, bathing, brushing and dressing skills.   The acquisition of eating skills is very complicated in children with motor problems.   Emphasis is placed on proper body positioning. Eating utensils are sometimes modified as seen in Fig - G.
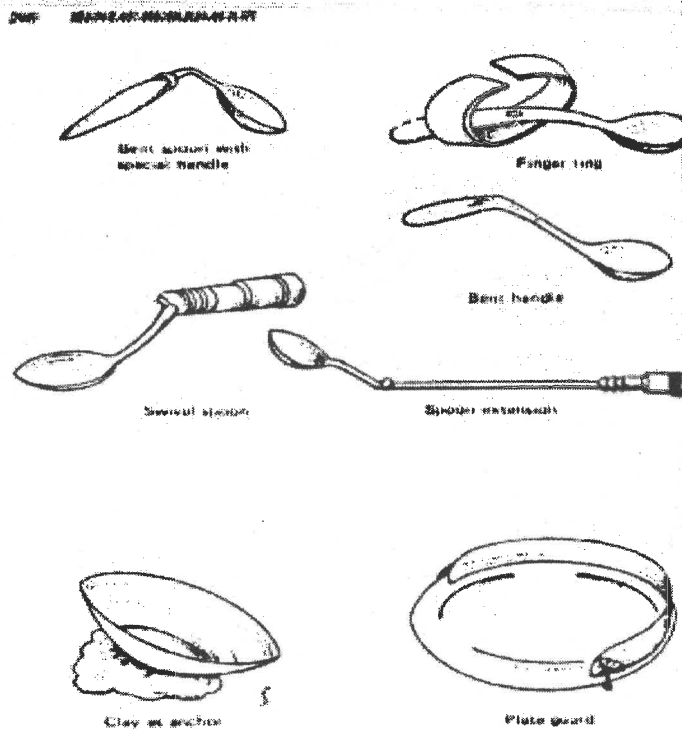
5.4.4.1 Feeding

Feeding is a major problem with mentally retarded children.   There may be difficulties in one or more areas.

1.   **Oral Problems**

    a)   string biting reflex

    b)   tongue thrust

c) high arch palate

d) difficulty in biting and chewing ability

e) difficulty in swallowing

f) persistence of sucking reflex, etc.

g) dental problem

Remedial methods

a) press the tip of the tongue with spoon

b) keep the food a little deeper into the mouth. Otherwise the food will be stuck to the palate.

c) keep boiled carrot or potato in between the teeth. Model by biting them or pressing in jaw area to close the mouth.

d) wash the mouth thoroughly after eating.

2. Postural difficulties

a) lack of head control

b) lack of sitting balance

c) lack of ability to maintain a straight position

Remedial methods

Use adapted materials like a chair with back rest or low cut out table depending on the ability of the child.

3. Hand to mouth coordination problem

a) unwanted movement of head and hand

b) lack of ability to grasp and release

c) lack of coordination

Remedial method

Use adapted spoon, plate and glass to suit the needs of the children.

Would you like to know how Manish who is 2 ½ years old and spastic, (CP) was helped to feed himself?

Manish was functioning at 6 months level. He was initially unable even to finger-feed himself. He could not bring his hands to midline without assistance, and he could only attempt to pick up small bits of food in raking motion. In order to help Manish, adaptations were made. A high chair was modified to inhibit extension reflexes and to facilitate normal eating movement. Over a period of three months Manish learnt to pick up food placed on the table at midline and bring it to his mouth in 10 seconds.

5.4.4.2 Adaptations in bathroom & toilet

1.   Use modified mugs with thicker handles to make it easier for the child to hold.

2.   Handle bars in the bathrooms help the child to hold and balance self.

3.   For severely retarded children use big tubs for sitting and strap him to the pipe so that he/she can balance him/her self. Take care that it does not hurt him.

4.   In toilets, handrails and adapted toilet seats or a rope suspended form the ceiling can help maintain balance in sitting/squatting position.

5.   A hosepipe fitted to the tap will help in supply of water to the body part to be washed after toileting.

5.4.4.3 Dressing

Dressing is one of the important skills, which leads the child towards independence.

As far as possible, the child should be taught to dress independently.

• Use of loose garments is necessary for easy handling.

• Neck should be bigger for the child to pull it easily.

• Adaptations like Velcro, elastic or zip will be useful instead of buttons.

• Teach the spatial concepts while teaching dressing skills.

• Children with severe motor problems can be taught dressing in lying position also by turning him to the sides.

• Child who has sitting ability can be made to sit on a stool and train him in pulling the pants up.

• Handlebars or such support to the walls help the child in holding with one hand and pushing the dress up with the other.

5.4.5 General Instructional Activities

Various activities are listed below. Teacher may select the appropriate activity keeping in view the age and level of the child. Help can be provided as and when necessary.

5.4.5.1. Gross motor activities

1. Have children participate in various styles of jumping i.e. pair jumping in which one child faces another and hold hands and then jump together to the count of 10 or line jumping, rabbit jumping and so on.

2. Have children participate in various types of creeping activities e.g. turtle crawl, snake crawl or creeping through a course made of boxes or chairs.

3. Have children take water in a container upto the brim and ask them to pick up the container and bring it to same specified point. This will help in walking with acceptable posture.

4. Let children walk through a maze designed by the teacher.

5. Lay the wooden ladder flat on the ground and have the children step into each square between the rungs.

6. Have the children walk on the balance beams.

7. Have the children participate in various types of walk. e.g. barefoot walk, walking on a line, walking sideways. A game can be played where children will walk like duck, dog and so on.

8. Have children participate in various types of hopping activities like hop on their left foot, hop on their right foot, hop as quietly as they can or as low as they can.

9. Have children participate in various types of rolling activities like ball roll, towel roll and so on.

10. Have children bounce the ball on the target which could be large in the beginning about 3' square. Have children see how often they can hit the target and have their partner catch the ball.

11. To develop running abilities, have children participate in relay race.

12. Have children play team sports as Kho-kho, basketball, football or chain.

13. Play a game in which you place cards (with pictures) around the room (like 4 toe touches, 3 push-ups, 10 jumps, 5 bent knee sit ups, etc.) Have children go to each card and perform the activity.

14. Use drama for body awareness and control of movement. Blindfold children and have them pretend that they are made of a substance that melts in the sun i.e. snow men, ice cream canes and so on.

15. Here recreational activities for gross motor skill development e.g. camping, hiking, etc.

16.   To assist children requiring more attention to motor activities, peer tutors can be used. Those peers provide one-on-one attention, praise and assistance. Let them work under your supervision.

5.4.5.2 Fine motor activities

2.   A teacher may slowly move a straw and the child (who is being trained) should be asked to put toothpick inside.

3.   Here the child plays with balls using, initially large plastic balls, later large play ground balls then smaller balls.

4.   Let the child place small objects into a bowl and then fish them out with in a specific time.

5.   Have the child ring handbells, turn doorknobs and unlock with keys.

6.   Allow the child to do activities with fingers e.g. squeezing tiny sponge, squeezing cardboard, spreading rubber band wide with straight fingers.

7.   Let the child participate in paper folding.

8.   Have the child practice block building, pegboard and copying models.

9.   Collect pairs of buttons that feel different from each other. Have children match up the pairs.

10.   Play a game where clothes are put in three piles e.g. put the piles in three different places. Have the children walk, jump or skip to each pile, find a garment and put.

11.   Provide exercises where the children will be helped to screw the nuts on the bolt till it is tight. Make sure that nuts and bolts join two pieces of some object.

12.   Place small objects in the tub with the sand and have the children retrieve the objects using different tools like tongs, spoon or spatula.

13.   Introduce cutting tasks where the child will use scissors.

14.   Encourage children to make the game board, which they can use to play. For example children can make a game board by sticking the string or toothpicks to the board in a ladder form. Play with a counter.

□

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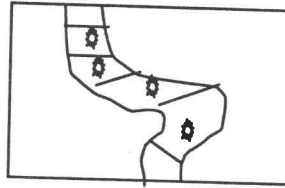
15. Involve the children in interesting small motor activities. Fabric pieces about 2" long and 1" broad could be taken. Put a small button on one end and a buttonhole on the other. Let the children button the material together in a sequence to make a lace or something such pattern.

16. Games can be played in which children match another set of objects already on string and children string in the same pattern or string by command.

17. Finger painting can be had in making greeting cards and later, painting with large brushes can be encouraged.

17. Encourage playing dot games. Construct a sheet with dots only and let children make their own drawing, by joining dots.

18. For older children fine motor skills can be enhanced by constructing model planes and cars.

19. Craft activities like airoplanes, folded fans and purse can be encouraged.

20. Pottery and clay activities can help improve fine motor coordination.

21. Decoration on display board with paper cut patterns, cutting paper, and stapling handouts are the other activities that can be encouraged.

5.5 MENTALLY RETARDED CHILDREN WITH MOTOR PROBLEMS IN GENERAL CLASSROOM

Assess the ability of the student. Observe how he performs, consult the parents, teacher and others involved in the students education for suggestions in giving the adaptation. Adaptations should be in the following way.

1. It should allow access to the task

2. The teacher should know how to use adaptations.

3. It should not restrict the movement of normal person.

WRITING ADAPTATIONS

- A pad of sheets (papers) rather than loose sheets
- Use of masking tape or a clipboard
- Use of control board
- Rubber strip on the back of a pad, use of magnetic board on iron desk to prevent slipping.
- Velcro to attach items to a desk or wheelchair or lap tray.
- Use of pens and pencils that require less pressure.
- A rubber band around the shaft of the pen, a small ball over the writing instrument.
- Use of typing aids such as a pointer stick to a head
- A line spacer that holds written materials while typing
- Computer assisted programme for functional academics
- Audio taping assignments, (can be operated with a single switch)
- Allow student to write single letter or a one-word response.
- Worksheets and tests that direct students to put lines through correct answers.
- Computer can be equipped with variety of switches that allow students to operate single movement.
- Alternate keyboards offer several features such as providing a large letter by pad over them, standard key boards, removing the need for simultaneous key provision.
- Touch sensitive screens also enable students to respond to instructions and questions by touching specific areas of the screen.
- Oral responses – speech synthesizers voice the responses that students with severe speech impairment type on the computer.
- Communication boards allow the students to indicate their response.

ADAPTATIONS DURING READING

- Book holders, reading stands that adjust to inclining, sitting and standing positions.
- Talking books enable students who cannot hold books.
- Photo albums with plastic coversheet/flash cards, work cards etc.

- Peer group help, cooperation and assistance to the special children to complete the tasks.

5.6 GUIDELINES FOR TEACHING MOTOR SKILLS

From the discussion above, you would have realized that these are a few points which are very important to keep in mind while developing motor skills in children.

1. Design an environment in such a way that facilitates movement. Provide abundant opportunity for movement. Activity area in the classroom should be so arranged to allow for easy movement. Encourage interactions at home and in the community.

2. Consider safety when structuring the home and school environment for movement.

3. Teach specific movement as a part of an activity. This practice not only facilitate acquisition of specific movement but can facilitate acquisition of behaviour in other areas. E.g. in training the child for fine motor activity the child learns to button his clothes and hence get dressed, which is a self-help skill.

4. Provide variety of structured (teacher directed) and unstructured (child directed) opportunities for movement. Schedule time each day for outdoor, gross motor and play activities.

5. Encourage independence and development of motor skills in young children with disability. Use adaptive equipment keeping in view the child's needs.

6. Select appropriate activity/material for developing find motor skills keeping in view the child's problem.

7. Skill selected for the training should be functional, that is they should serve a useful purpose in child's life and improve control of environment. Behaviours such as proficient locomotion and head control are more functional than standing on one foot or jumping from high platform.

8. Ensure that maintenance and generalization of gross motor behaviour takes place. To accomplish this, teacher should work with parents in selecting skills to be developed and then expect reinforcing those skills in other situations.

9. Motor skills should be facilitated in a game format. It increases the likelihood of maintenance and generalization. It also promotes social interactions and opportunities for fun and recreation.

5.7 MEETING EDUCATIONAL NEEDS

The teacher and the peer group are the important supporters for the successful integration of a child with cerebral palsy and mental retardation. The teacher and the peers in the classroom can encourage the child in the classroom to meet the individuals needs.

- If the child is using a wheel chair the desk or tray should be provided at such a height so as to enable the child to reach it without experiencing any discomfort. All the materials should be within the reach of the child.

- If the child's hands are affected you may have to provide him with a thick handle pen or pencil. Other children can help the child by taking down notes for him. If the child has severe motor problem help for writing may be provided. It may be necessary during the examination.

  ❑ Special writing materials may be needed if the hand, arm or joints are affected.

  ❑ Appoint a friend or peer to carry or bring material to the student's desk.

  ❑ Allow more time to work and allow him more time to complete each task.

  ❑ Give homework that he can handle.

  ❑ If one hand is affected, teach the child to use the other hand.

  ❑ Make the peer group understand the condition of the child and help him when needed.

  ❑ Encourage the peer group to push the wheel chair gently to prevent any possible injury.

  ❑ Educate the peer group by explaining that the child with mental retardation is like other children and should be treated like one among them.

  ❑ Persuade the peer group not to tease the child for being different.

Positioning the child in class

The head should be straight, the body symmetric, the arms straight, both hands in use and weight bearing should be equally distributed.

1. Functional position should be comfortable

2. Seating adaptations for children (to meet specific needs) like special cushions, corner seats, wheelchairs cut out tables, and walkers should be provided.

3. Teachers should see that the aids do not restrict a child's movement.

4. Educational goals for individuals students must be developed on the basis of evaluation data.

5. Consider the present physical and communication capabilities of the child.

School Responsibilities

To provide educational facilities for the child's development, the schools should,

- take the assistance of resource teachers in dealing with children with special needs.

- evaluate the present and future needs of the child and programme according to the priority needs of the child.

- encourage parents in bringing up a child with mental retardation like any other citizen of the society.

- accept the child with mental retardation and encourage others to do the same.

Teacher's role

After the parents it is the responsibility of the teacher to mould the child in a proper way.

- The Teacher has to be sensitive to the needs of the child.

- Allow the child to learn at his own individualized pace.

5.8 UNIT SUMMARY

You have noticed that the therapists play a big role in developing motor skills and remediating motor problems. It is very important to have the knowledge of influence of primitive and automatic reflexes in motor skills. You have learnt how a therapist can help the infant attain/develop automatic reflexes. The young child with motor delay requires team approach involving a doctor, therapist, parents and teachers to meet the special needs at home and school. There should be mutual understanding between therapist and teachers to strengthen motor skill development. Adaptation of material/equipment and also the environment need to be planned carefully when handling children with delayed motor development.

Variety of activities, which are interesting, should be made integral part of the child's day-to-day program. As far possible games should be planned wherein children could strengthen their motor skills.

While integrating in regular school, the teachers and peer group should be sensitized to their needs.

5.9 CHECK YOUR PROGRESS

I   Answer the following:

    a)   What is asymmetric tonic reflex – Explain how it interferes with eating skills?

    b)   What is labyrinthine reflex? If persists, how does it affect the infant?

    c)   Design a play activity in which fine motor skills can be strengthened.

    d)   Give two activities for facilitating the use of (a) wheelchair (b) crutches.

II.   Describe how therapeutic intervention can help develop motor skills in children.

III.   State whether the following statements are True or False

    a) Select those motor skills for training that are functional

        True/False

    b)   Assessment is not required before planning the therapeutic programme for the child

        True/False

    b) Teaching through play results in better learning

        True/False

    d)   Maintenance and generalization is not required once the child has acquired motor skills

        True/False

    e)   Teacher should design the environment in the classroom in such a way that it will facilitate movement

        True/False

    f)   Mentally retarded children with motor problems cannot be integrated.   True/False

5.10 ASSIGNMENT/ACTIVITY

1.   After going through the unit and visiting clinic write an essay on;

c)   Role of therapeutic intervention in enhancing motor skills.

d)   Develop a checklist for gross and fine motor skills for assessment purpose.

2.   OBSERVE CHILDREN (INFANTS) HAVING ATNR REFLEXES AND NOTE THEIR BEHAVIOURS.

3.   PLAN A GAME IN WHICH YOU MAY FACILITATE USE OF CRUTCHES.

4.   Plan 2 games in which you will facilitate use of cane.

5.   Take a child in wheelchair to a department store that has an elevator. Note down the difficulties he and you encountered while on this shopping space.

6.   Go on visit to occupational or physiotherapy unit. Observe how proper positioning techniques are used, and also how adaptive equipment is used to teach self-help skills. Note your observations.

5.11 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 those points below:

5.11.1 Points for discussion

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5.11.2 Points for clarification

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_____

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_____

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5.12 REFERENCES/FURTHER READINGS

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BLOCK 3: CURRICULUM AT SECONDARY, PRE-VOCATIONAL AND VOCATIONAL LEVEL

UNIT 1: CURRICULUM DOMAINS AT SECONDARY LEVEL

STRUCTURE

- o **Introduction**
- o **Objectives**
- o **Definitions**
  - ▪ Communication
  - ▪ Language
  - ▪ Speech
- o **Development of speech and language**
- o **Receptive and Expressive Disorders**
  - ▪ Disorders in receptive language
  - ▪ Disorders in expressive language
  - ▪ Functional communication
  - ▪ Voice problems
  - ▪ Fluency disorders
- o **Disorders of hearing**
- o **Activities to enhance communication**
- o **Nonverbal communication**
- o **Unit Summary : Things to remember**
- o **Check your progress**
- o **Assignment/Activity**
- o **Points for Discussion/clarification**
- o **References/Further readings**

1.1   INTRODUCTION

Speech and communication are characteristic features of the human race. Ability to communicate effectively requires the integration of abilities - a person has to understand what, when and how to communicate; skillfully handle different people in their environments; and the ability to learn from experience. Hence, it may not be surprising that children with mental retardation present varying degrees of deficits in communication. It is necessary to provide help to these children in learning to communicate better. In other words, understanding communication problems in mentally retarded children requires a thorough understanding of the child and its environment.

1.2   OBJECTIVES

On completion of this unit, you will be able to

- define communication.

- describe common speech and language difficulties mentally retarded persons have.

- describe common hearing disorders they exhibit.

- narrate activities that enhance their communication skills.

1.3   DEFINITIONS

1.3.1   Communication

When an infant cries, mother picks her up. The child calls the teacher and teacher attends to the child. A mentally retarded child tugs the teacher's dress to get attention.   The act common to all these situations is communication. Every living being communicates.

Eg. Dogs communicate through tail movements, barking, etc.

Human beings communicate to share ideas, feelings, desires, emotions and for sheer pleasure.   We observe and take part in several communicative interactions everyday. It serves to maintain relationships amongst all of us. We all are either giving or receiving information throughout the day.

Generally, communication is an active and intentional process.   The speaker intentionally transmits information (message) and the listener intentionally receives it and subsequently they may exchange their roles.   It is also possible to communicate without intending to do so. Eg. Displeasure, which we want to hide, gets expressed through eyes, body postures, tone, etc.

The message can be transmitted in different modes. Rather, we can use very possible sensory modality in communication.

1.3.2 Language

Language is the main vehicle for communication. Language is a set of arbitrary symbols (mainly conventional) used by a group of people for the purpose of communication. Understanding of language requires the explanation of terms *symbol* which are given below.

Symbol: Symbol is a code that stands for or represents an object, an action or a person. Example of symbols are words and hand gestures. Symbols are arranged in an order making use of a set of rules. These rules are shared by the community and are arbitrary.

Arbitrary: The symbols of language are arbitrary, ie., there is no inherent one to one 's relationship between the particular spoken written or signed word and the object, idea or class of objects it symbolizes.

Eg.   Symbol Object   Apple

As language is the main vehicle for communication, language essentially has same functions as that of communication. Just like communication which has different modes, the language has different parts. These parts deal with what to say (**Content**), when to say (**use**), and how to say a word or a sentence (**form**). These parts are called as components of language. We will be able to communicate efficiently by making use of these components.

i)   Form – deals with the structure of language – how to form words and sentences grammatically.

ii)   Content – deals with the meaning part of language – What to say or the content of the message.

iii)   Use – deals with the usage of language – where, when, with, whom and for what purpose language is used.

For eg.: In the statement – "I am Mukesh" Form is `pronoun + verb + noun`, content is conveying one's name; and use is fulfilling the purpose of introduction.

1.3.3 Speech

Speech is the most efficient and frequently used mode of language expression. Speech is a set of verbal codes, the commonest codes are spoken words. Words are combined in specific ways to convey meaning. Speech is produced with the help of speech mechanism structures like tongue, jaw, lips, etc. in a complex coordination with the nervous system. Speech based on the language is useful. Otherwise it may sound meaningless.

When do we call speech and language as normal?

Speech and language of a person are accepted as normal if they resemble the speech and language of a majority of the people of same age, sex, culture, socio-economic level and educational level.

Speech and language are abnormal when these criteria are not met. Due to the deviation from above said criteria, communication becomes unpleasant and difficult to understand.

What are the common speech and language disorders?

• Language disorders: Persons having difficulties in understanding and expressing symbols (eg. Words and/or signs).

• Articulation disorders: Persons having difficulties in speech and sound production.

• Voice disorders: Person having abnormalities in pitch, loudness and quality of the voice.

• Fluency disorders: Persons having problems in smooth flow of speech utterances.

Nature of speech and language problems in mentally retarded persons:

There is no typical speech and language pattern of mentally retarded persons. Mentally retarded children exhibit a wide variety of speech and language problems and the problems are highly individualistic in nature. That means no two mentally retarded children show the same problems. The range is so wide that one child may not speak at all and understand very little of other's speech whereas another child may have fairly good comprehension for day to day living and enough speech to express but the speech is unintelligible.

Generally, it is accepted that the speech and language development in mentally retarded children is delayed as compared to normally developing children. That means to say that mentally retarded children develop speech and language skills in the same sequence as do normal children and the factors underlying development

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are same. However, they develop skills more slowly and they have a lower ceiling of development than non-retarded individuals. The available evidence suggests that mentally retarded children are likely to show specific difficulties or delays in the structural aspects of language particularly in respect of sentence length, structure and sentence complexity.

1.4 DEVELOPMENT OF SPEECH AND LANGUAGE

No one knows when or why the very first word was spoken. We begin our account from the moment of birth, trace the course through the stage of reflexive cooing and crying sounds, then through the period of babbling and finally into the acquisition of full fledged language.

Pre-requisites for language and communication development:

In order to communicate i.e., learn and use language, the individual ideally needs to have the following skills and capacities. These pre-requisites are important for both normal and mentally retarded children.

1. **Sensory abilities**: Adequate hearing and vision are essential for easy learning of spoken and written communication. Persons with hearing impairment have the disadvantage of missing out on other's speech. They not only miss other's speech but fail to hear themselves. This will hinder speech and language acquisition.

   Similarly for learning of written language as well as gestural language, one needs to have adequate vision. Apart from vision and hearing, sensations of touch, movement, and direction also play important roles in acquiring language.

2. **Motor abilities**: Motor abilities range from the ability to produce speech sounds to manual hand signs as a means of communication. Speech is one of the most complex motor acts through which brain expresses ideas and feelings. Other language expressions like writing, signing, miming, gesturing, etc. are also motor acts. If the motor abilities are not adequate, expression through both speech and non-speech modes may be affected. The motor abilities like walking allow the child to physically explore the environment which provides the child the necessary experience about the surroundings, that forms the basis for language learning.

3. **Speech production mechanism**: Adequately functioning speech production mechanism is necessary to produce speech. If the

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structures of the mechanism like lips/tongue/throat are affected the movements of these structures also get affected and results in inappropriate sound production and finally results in delayed speech and language acquisition. In addition, problems like feeding difficulties, nasality and drooling may also result. Despite difficulties, many times we manage to produce speech clearly due to the compensatory movements of the speech mechanism.

4. **Processing skills**: A person may be able to hear or see and also make speech sounds but still may be unable to communicate. Communication using language is a higher mental function carried out by our brain. Functions like using arbitrary symbols, require an ability to receive sensory input and use it for expression. In order to infer meaning from sensory input (what is heard) and to express meaning, individual should have a variety of processing skills and abilities. To receive sensory input the person should be able to:

a) attend to stimuli (what is heard or seen or felt).

b) Attach meaning to what is heard (association of meaning with words).

c) Store in memory and recall what is heard or seen.

d) Recognize various symbols or sounds of his language.

e) Use reasoning and logic to arrive at conclusions and solutions.

f) Generalize ideas and concepts to various situations.

Similarly to express, a person should be able to:

a) plan and formulate speech sounds in the brain,

b) select a set of sounds for production in brain.

c) Produce words and

d) Sequence these words to form sentences.

Many of these processing skills are deficient in mentally retarded children.

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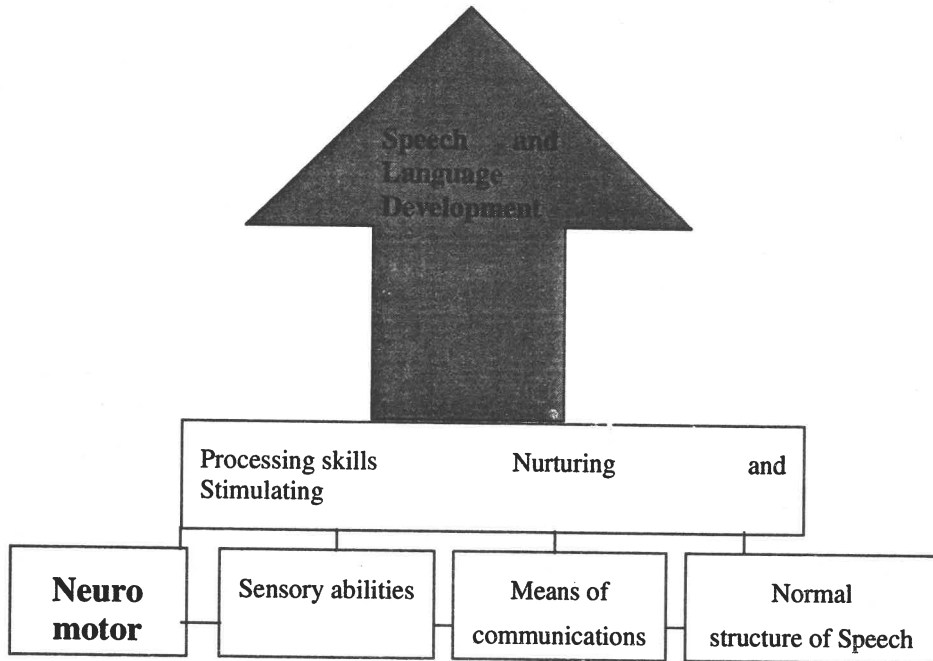
Figure-1: Schematic Representation of Pre-requisites

5. **Stimulating environment**: Language is acquired in a social, environmental context and does not take place in a vacuum. Atleast three environmental aspects are crucial in promoting language acquisition:

    i) An emotionally caring relationship with a caregiver/ parent, who provides rewards for the child's attempts to communicate. A child while enjoying interaction continues to listen and use language. You must know that by saying or doing something, she can affect the behaviour of another person in specific ways. You must have some appreciation of cause and effect. At a more sophisticated level, the individual needs to learn to converse with other people, starting from the caregiver. A child must learn to take turns in conversation, to understand what other person says, etc., which are the rules for a good conversation. Appropriate usage of language is encouraged by the caregivers and as a result, child acquires language.

    ii) Second important aspect of a stimulating environment is atleast one speech model (person) who uses simple but well formed

language patterns. A child tries to speak like (imitate) an adult while producing sounds, words, intonations etc. While speaking to a child, adults are known to simplify their language, like speaking in simple sentences, and slowly, so that child can easily understand and pick up language.

iii)   Third important aspect of a stimulating environment is providing opportunities to communicate or help the child to have "something to say":. To communicate in an environment, the child should find preferences or felt needs. Having the ideas will allow the child to interact.   Here, the child needs to have a reason for communication. If there is nothing in the environment which he wants or if he does not enjoy interaction, then there is no reason to communicate.   If a child is not given an opportunity to communicate he is certainly not going to use language. Similarly we should stimulate a child so that he gets interested in the happenings in the environment and finds a need to communicate.

6.   **Means of communication**: A child must have a way to communicate his desires, needs, or feelings etc.   It may be speech, manual communication or sign language.

Language acquisition

Language acquisition starts very early in life, probably starting from birth and moves on through the stages of reflexive crying, babbling, and finally into acquisition of full fledged language.

Language acquisition is a process that most of our children go through without conscious tuition. The rate of acquisition varies from child to child. Language continues to develop throughout elementary school years. Some aspects like vocabulary continue to develop throughout life. The development of language is orderly and hierarchical. A basic sequence is followed and early stages are essential to the development of subsequent stages. The important stages in acquisition of speech and language are:

❑   Prespeech vocalization

❑   First words

❑   Combining words

❑   **Prespeech vocalization (0-18 months)**

Prespeech vocalization refers to utterances by the child before the first word stage. During the period of prespeech development child lays the foundation for true speech. The pre-speech vocalization consists of:

i)   reflexive utterances

ii)   babbling

iii)   use of inflections

i)   *Reflexive utterances (0-3 months)*

During the first three months of life a child has a very limited variety of vocal behaviour.   The two main types of reflexive utterances produced by a young baby are:

a)   crying

b)   comfort sounds

a)   Crying sounds: The early crying is generally a discomfort sound and is also one of the first methods of communication.   Initially we may not discriminate between cry caused by hunger and cry because of pain.

When the baby is about 2 month old, parents can discriminate several different types of cries caused by hunger, pain, distress etc.   Through these cries the child practices essential motor coordination and establishes necessary feedback connections between larynx, mouth and ear.

b)   Comfort sounds: These are difficult to describe in words.   They are also called as cooing sounds.   They mainly appear during or just after feeding or diaper changing, or some other forms of relief from distress ie., comfort states.

The child at this stage shows early signs of social awareness as evident in following adult's movements with the eyes and smiling.   Child can also imitate facial gestures of an adult.   As can be inferred, the child appears to be practicing the basic skills of breathing for speech and production of voice.

ii)   *Babbling (3-8 months)*

The stage of reflexive vocalization is followed by babbling.   This is a well known phenomenon found in all language environments.   Babbling refers to child's production of chains and series of syllables in a single breath.   A syllable eg. /ka/ is a combination of consonants and vowels.   Eg. Baby seems to play with his tongue, lips and larynx like he does with his fingers or toes.   He makes varieties of sounds with different styles.   Majority of vocalizations happen when the baby is alone. The vocalization may sound like /ka, ka, ka.../, /da, da, da..../ .   At about fifth or sixth month, infants use babbling to get attention, to reject and to demand.

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iii)   *Adding intonation to this babbling*

Around 8 to 10 months, the babbling series which has a rich variety of sounds can be heard as expressions of questions, commands, surprises etc. This becomes possible because of the addition of the sing song tonal characteristics (intonation) that are imposed on babbling. Usually these utterances have no meaning although this sounds delightful. The parents feel that their child is using a `foreign language'. This jargon speech continues in some children for a longer period whereas some children quickly move on to first words.

❑   **First words**

By the age of 1 to 1 ½ years most of the children say their first words. Change from the stage of jargon speech to first words stage is marked by the presence of ideomorphs or self made words.

Ideomorphs: Before producing adult like words the child uses different self made syllables and words to denote different objects and actions. Child forms his own words. These self made words of the child are called as ideomorphs. Ideomorphs have different origins arising in the child's daily life. A set of common sources are listed below in Table-I.

Common sources of Ideomorphs

Source	Example utterances
Pointing	/aaa/ need that object
Straining while carrying heavy objects	/uuum/ one straining while carrying load
Imitating sounds in the environment	/bow wow/ dog barking /meow-/ cat mewing
Self-Imitation	/dhub/ - fallen down with thud
Description by moving organs	Rounding the lips organs sucking air in and raising eye brows to mean "so many"
Imitation of adult speech	/chichi/ - (I hate it)

Ideomorphs to first words: Over a period of time, from ideomorphs child slowly shifts to standard adult words. This will happen in different ways as described below:

i)   A child may use adult like inflections along with ideomorphs and slowly shift and maintain the standard word.

ii)   May combine ideomorph with other standard adult words to form compound words.

Eg. Child may use "Brrr…" for bus and combines "man" to form "Brrr man" to denote driver.

How do first words sound:

First words do not sound like adult words. They are mostly single syllables but are repeated. Eg. Da-da, Papa, mama. Child produces the same word but with many intonations to look like questions, request, demand etc. depending on the situation. The child uses one word like a sentence. Often an appropriate gesture will accompany the utterance. Important objects, events and persons from a child's daily experience are only uttered first. Children target objects and people for their first words – which are moving (like vehicles, persons) movable (like toys) or child has direct control over (for example knicker is acquired earlier than shirt).

The first words are simplifications of the adult forms and hence do not sound like adult words. Gradually as the child gains experience and neuro-motor coordination, he approximates adult forms more and more correctly.

What children may mean when they use the words?

The meanings intended by children by using the words or gestures can be called as Semantic Intentions. It may be assumed that children do not start with the adult meanings. They have to work towards developing the adult meanings depending upon their experiences in hearing and also using the word in different situations. The common strategies children use while developing meanings of the words are under-extension and overextension. The child may use a word to mean only one thing and not class of similar things. Eg. Using "doggie" to mean only the pet dog and not other dogs or using "chakie" to mean chocolate the child likes and not other chocolates. This is referred to as under-extension. Similarly child may use a word to mean more than what adults mean, for example using "ball" to indicate moon which is termed as overextension. On repeated using of the words and depending upon the adult reactions, the child gradually approximates adult meanings.

❏   **Combining Words**

Development of word order: The earliest stage of grammatical development hardly seems like grammar at all. This is because only single words are involved – for example utterances such as mama, bye bye. Most of the words used at this stage seem to have a naming function and will develop into nouns. Few others are action words. Many of these develop into verbs. Few other word classes are also found at this stage. Eg. Adjectives and Adverbs.

In many respects, these early utterances function as if they are sentences. For example: A child may use the word "ma" in three or four different forms "ma" with

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questioning intonation on seeing a lady approaching may mean "where had you gone"? When the same child says "ma" with demanding intonation with hands stretched may mean "Pick me up". At this stage, these utterances do not have a distinctive grammatical form, but the use of intonation and gesture conveys the force of the sentence types. Soon, the child learns to combine words Some of the early word combinations are of two words.

Two word sentences

Children string two or more words together around 18 months of age. This tends not to happen suddenly. There is usually a transitional period, in which words are brought together, but the sequence is not uttered as a single, rhythmical unit as in "daddy-gone". Lengthy sequences of such words can often be heard. But soon two-word sentences emerge with great confidence and increasing frequency. During the early two word combinations children talk a great deal about objects. They point to the objects and name them (demonstrative) and they talk about where the objects are (location), what they are like (attributive) who owns them (possession) and who is doing this to them (agent-object). They also talk about actions performed by people (agent-action), performed on objects (action-object) and oriented towards certain location (action-location) (Table-II). Objects, people and actions and their inter relationships pre-occupy the child at this stage which actually are the experiences that the child has gone through so far. Some of the common word combinations which represent a small group of meanings or semantic relations as expressed in children's language are given below with examples. As can be seen, semantic relations are telegraphic in nature. However, these telegraphic utterances turn into more grammatical sentences.

Development of sentence structures

At around two years of age, many children produce sentences that are three or four words in length and combine these words in several different ways to produce a variety of grammatical constructions. Typical sentences at this stage include "daddy, give bikki" etc.

Common Two Word Semantic Relations

Semantic relation	Example utterance
Agent + Action	Mummy come
Action + Object	Drink milk
Agent + object	Mommy sock

Action + location	Sit-chair, toy-floor
Possessor + Possession	My teddy
Entity + attribute	Crayon big
Demonstration + Entity	That money

Transformations

As the development of the capacity for expressing in simple sentences has taken place, the child is ready to make more modifications.

At this stage the primitive statements are modified or transformed to make constructions like question forms and negations.

Later Syntax

By the time a child is ready to enter kindergarten, he will have acquired almost the entire adult grammar. Only few refinements need to be learned. These are acquired by 10 or 12 years of age. Some of these are –

- *Comprehension and expression of passive voice*: Comprehension of passive voice is achieved around 12 years of age. If given a sentence: "The cow was kicked by the horse", children around 5 or 6 years may interpret that as "the cow kicked the horse".

- Exceptions to general rules: The plurals like "goose" is singular and "geese" is plural is learned around 11 years.

- *Complex transformations*: Child requires a considerable sophistication to restate a sentence in different ways. For example: It is nice to play foot ball. It can be restated as "Food ball is a nice game to play" or "Playing football is nice". Such transformations are learned during schooling.

VOCABULARY GROWTH

Age (in Months)	No.of words
8	0
10	1
12	3
15	19
18	22
21	118
24	272
30	446
36	896
48	1540
60	2971

Development of pragmatics (Use of Language)

The task of language acquisition requires that children learn much more than patterns of sound, grammar and vocabulary. They must also use these patterns appropriately in a rapidly increasing range of everyday social situations. Pragmatics is language viewed from the point of users, especially choices they make, difficulties faced during usage of language in social interactions, etc. It is not possible to talk about definite stages of development, but the early age at which these emerge is now clearly established. There are different aspects of pragmatics namely,

i)   Expressing intentions: For what purpose we communicate.

ii)   Initiating, maintaining and closing a conversation.

iii)   Awareness of the listener: How to read the listener in terms of who is the listener? And what does she know. Our talk on a topic depends on the answers to these questions.

iv)   Recognition of the role of situational context, ie., when to offer condolences. When to offer congratulations etc.

A note on Talking to Babies

Soon after birth, the infant and the caregiver engage in mutual dialogue. To some degree, both partners control this exchange. The child sets the level of exchange because of his limited abilities. Mother controls the exchange, by modifying her talk and actions, to fit the child's abilities, to maintain the infant's activity level. Generally, the exchange takes place in a face to face situation.

The speech and language of adults and children is systematically modified from that used in regular conversation. This adapted speech and language has been called baby talk or motherese. Baby talk has short sentence length and simple words. Mothers repeat and re-explain themselves, possibly to help the baby understand. Topics are limited to here and now. In addition, heightened use of facial expressions and gestures is seen. Many mothers use a considerable number of questions and greetings with their infants. After a pause, which may be treated as a response, mothers continue replying.

1.5   RECEIPTIVE AND EXPRESSIVE DISORDERS

1.5.1   Disorders in Receptive Language

Let me introduce you to Mr.A (Anil) and Mrs.L (Lalita) who have a child, a boy `Bittu' who has recently at the age of 4 years been diagnosed as a child having mental retardation. Bittu who is 4 years old behaves and performs in all his activities like a 2 year old. Have you seen anyone like Bittu?

Bittu is a physically able child. He can see and hear well. The problem is that he cannot understand too well.

If a child did not understand too well, do you think he would be able to speak well?? What do you understand form the following dialogue between Bittu and his father?

Father: Bittu what is this ? (shows picture of a TV)

Bittu: Give me.

Father: I will give it to you but what is this?

Bittu: Song, give me.

Father: Yes you hear song in it, it's a TV.

Bittu: TV, Give me.

Bittu like many other children with mental retardation has problems in comprehension. For example, the knowledge of objects, persons and actions, is limited.

- They may not understand questions as what, why, who, when and where.

- Cannot understand complex sentences and therefore, jokes, riddles are not understood.

- Abstract concepts eg. Angry/love are very difficult than concrete vocabulary like bus/ball/cake.

- Limited ability to attend problems with given instructions.

1.5.1 Disorders in Expressive Language

1. About 40% of the mentally retarded children are non-verbal, that is they do not use speech. Some of them may not even have basic communication such as indication for hunger by crying, fussing, pulling others or by pointing. Some learn to use basic gestures for food, toileting and for other basic needs. Here, the main problem probably is not developing a viable phonological system.

2. Given that the verbal ability of mentally retarded persons is restricted, many of them resort to use of non-verbal expression modes. The commonest mode adapted is using gestures. The number and variety of gestures used are limited.

3. Most often a mentally retarded person's response will be with one word expressions. They generally fail to combine the words into sentences. When sentences are used, they would resemble a telegraphic message.

4. Some of them repeat the question instead of replying.

    For eg.   Adult: "What's your name"

    Child: "What's your name"

This is known as echolalia which is not uncommon in the children with mental retardation. Some mentally retarded persons seem to be speaking excessively which is perceived as a problem by parents. Here, the main problem may be in understanding meanings (semantic difficulties).

5. They have problem in asking questions using negative and complex sentences. They fail to describe events or actions, asking for information, describing needs, requesting for clarification, telling lies, jokes and so on.

6. Inspite of knowing what to communicate, a mentally retarded child may find it difficult to participate in a conversation. They have problems in taking appropriate turns while conversing. Initiating, maintaining and terminating

conversation are major problems in them. These problems can be grouped under pragmatic aspects.

Articulation problems

1. Some mentally retarded children speak in sentences and phrases, however, they may be unintelligible. Particularly persons unfamiliar with the child will find it very difficult to understand the child's speech.

2. The major contributor for unintelligibility is the defective articulation. Many a time the sound production in isolation may not be defective but when saying words and sentences (ie., coarticulation) or in running speech it lacks clarity.

3. The typical misarticulations in mentally retarded children are the distortions of the target phonemes, simplification of consonant clusters, eg. "tee" for "tree", omission of final consonant like "boo" for "book" and substitution of one phoneme for the target phoneme "lail" for "rail". These problems may sometimes resemble the way in which words are learnt by normal children during their first word development.

4. Not all the times, improper production of phonemes is the only cause for clarity problem. If a person does not use proper stress on words and proper words in sentences, clarity will suffer. `Stress and intonation', which are known as suprasegmental features are mainstay of pleasant speech. Many mentally retarded children show problems in using appropriate suprasegmental features resulting in monotonous and unintelligible speech.

1.5.2 Functional Communication

Children with mental retardation are willing communicators. They may choose to communicate using gestures or speech, even both together at times. Thus their functional communication skills are by and large intact. They can indicate their basic needs quite well to any willing listener. Most people get impatient while dealing with these children, thereby creating a hostile environment in which such children cannot perform or communicate.

Look! What happened to Bittu at his chacha's (uncle) house.

Bittu: Pointing towards the kitchen excitedly to his chachi (aunty) saying de de de.

Chachi: (who was busy stitching) stop jumping. NO I cannot give you anything. New I am busy.

Bittu:	repeats (what he was doing).
Chachi:	(Pulls him down on the sofa beside her) stop it and sit down quietly.
Bittu:	Starts to cry but sits down.

Burning smell comes from the kitchen chachi runs there and finds that the milk has over boiled and is all over the floor. Exclaims oh! God Bittu saw this and that is why he was saying de de for du du (milk) while pointing to the kitchen.

Once people realize that the child too has potential they should try and develop his personality as a whole. This means treating him well with respect and love. Letting him take on the responsibilities which he can fulfill, he will be actively learning new words and thus also attempting to say new words.

Yesterday Bittu's mother decided that he must now learn to put the plates/spoons and glasses on the table.

Mother: Bittu take the 3 plates. Put plates on the table.

Bittu: Holds the plates says pates, counts them as 5 (recounts when the mother tell shim to do so) says 3 pates and takes these to table.

Mother: Bittu, take the spoons, count them.

Bittu: 1, 2, 3, 4..... 1, 2, 3 poons.

Put them on the table.

Mother: Bittu take the glasses. Count them.

Bittu: 1, 2, 3 glachi table.

Mother: Yes! Put them on the table.

Good boy! Bittu, you can lay the table now.

1.5.4 Voice Problems

Titu, Bittu's friend unlike Bittu speaks in a very loud and hoarse voice. He often is unclear because of his voice quality.

Do you know anyone who has a poor voice quality? Voices which are too loud, too soft, hoarse, harsh, breathing and nasal are poor in quality.

Titu may be having poor voice quality also because he is a child with mental retardation who is not intelligent enough to realize whether he is sounding good or not, moreover because of his ear infection and the subsequent hearing loss may be he is not hearing himself too well.

As already discussed in this unit the child with mental retardation manifests deficiencies in his comprehension and expression, beside which he can have misarticulation and voice problems.

1.5.5   Fluency disorders

Some of the children with mental retardation also show fluency problems which is commonly referred as stuttering and stammering.

Bittu and Titu are friends. They attend the same school and are in the same group. They read together, write together and even make fun of "Jeetu" together.

Bittu:	Jeetu, whats lunch.
Jeetu:	Pu…..ri, pu, pu ri, puri.
Titu:	Oh! OH! Pu Pu Pu Puri.
Bittu:	He! He1 Pu Pu Pu Pu Pu Pu Puri.
Jeeti:	Do Do Do Don't, I I I I, will hit you.
Bittu:	I I I I ! ! (and laughs).
Titu:	Do Do Do Don't , I I, I, (and laughs)

May be, someone you have seen may be speaking like Jeetu. Stopping, repeating, hesitating, over sounds, sometimes opening the mouth and experiencing that no sound comes out. Have you ever experienced stage fright, where you were unable to say something?

Children with mental retardation also sometimes show speech characterized by hesitations, pauses, repetitions but they DO NOT REACT TO THESE DEFICIENCIES LIKE WE DO. THEY MAY NOT BE AWARE OF THEIR PROBLEM.

1.6   DISORDERS OF HEARING

Bittu is a lucky boy. His mother was very upset when six months back one night Bittu got up from sleep crying loudly, pressing his hand to his ear and saying Kaan (ear) while sobbing. They rushed him to an ENT Doctor who told them that because Bittu breathes through his mouth, he is more prone to cold an cough. Frequent cold and cough cause a tube to close in the ear and thus there develops an ear infection. In some people it comes out of the ear and is called ear discharge. Bittu's mother attended to it early and saved him from acquiring a hearing loss. Titu, Bittu's friend was not so lucky, he too is a child with mental handicap but he also has hearing loss.

Since most of the children with mental retardation are mouth breathers, they are quite prone to cold and cough. And thus can develop ear infections leading to hearing loss. But if the parents are guided well, they seek treatment at the earliest and the child's hearing will not get affected.

Do you know that we all need normal hearing for acquiring speech and language.

HEARING LOSS CAN BE PRESENT DUE TO MANY OTHER REASONS ALSO.

1 Note a child's speech and language pattern, who has hearing loss.

2 Compare it to a child who has mental retardation and hearing loss.

3 Compare child 1 and 2 with a child 3, who has mental retardation, hearing loss and visual problems.

Definitely the child 1 performs better than children 2 and 3. More the disability, poorer the progress.

Some children with mental retardation may even have a type of hearing loss which cannot be corrected with medicine or surgery. These children need to wear HEARING AIDS which are amplification devices that increase the loudness of the sounds enabling the person to hear again.

1.7 ACTIVITIES TO ENHANCE COMMUNICATION

All activities of helping/training to enhance communication skills, should be based on a reliable assessment of the child's existing communicative skills. Since, we have understood that a child with mental retardation is likely to develop like a normal child, but with a slower speed of development, finding about the current stage of development is important. The objective is to understand the relative strengths and weaknesses. Remember that this assessment is a continuous process. Always get the help of professionals like speech-language pathologists for detailed work up. Remember that parents are the best sources of information.

Assessment can be defined as a systematic approach to measure and evaluate a child's skills, capabilities and limitations in communication. It involves gathering, recording and interpreting information about the child's communicative abilities, usually as a basis for intervention.

Generally assessment will need to be in the following areas:

(i) Find out the most frequently exposed language to the child at home, number of persons at home and a general time table of activities at home.

(ii)   Observe for any gross deviations, structure and function of the speech mechanism and status of hearing ability.

(iii)   The nature of parental talking to their children.

(iv)   The capacity of the child to understand and express different words and their types, early sentences and sentence types.

(v)   Ability of the child to participate in conversation, clarity of speech, etc.

Remember that the information in different areas can be collected from professionals in appropriate areas. DO NOT HESITATE TO INTERACT WITH OTHER PROFESSIONALS.

LANGUAGE AND COMMUNICATION INTERVENTION

Language and communication intervention (LCI) has benefited from the studies on normal language development in recent years. Recent research in this area has brought forward the role and importance of experience, in both linguistic, and non-linguistic activities, during language learning. Similarly the role of cognitive development is of critical importance. All our intervention efforts are in fact attempts, indirectly or directly to improve cognitive development.

LCI is a deliberate attempt to improve the existing communicative behaviours and facilitate learning of new communicative behaviours. This involves rearrangement of factors than can be manipulated to facilitate language and communication acquisition. LCI should assist the child in developing a desire to communicate and provide him with a means to do so in meaningful situations.

Major principles of LCI

Currently used programs for helping children acquire language and communication skills are mainly derived from two sources namely, the increasingly expanding knowledge from the studies of language acquisition in normally developing children, and growing importance of the functional communication in daily life situations.

As a consequence of availability of information from the above mentioned areas there is a change in the view that language and communication intervention should be done only by a speech pathologist in his clinic. Language and communication training can also be done effectively by parents and teachers who are in contact with the child's daily life with assistance from a speech pathologist. The training targets selected should focus on the immediate usability of words and sentences. It can be restated that speech pathologist can work as a facilitator or guide in helping

mentally retarded children to learn better. Actual implementation of the program, and in many occasions planning of the program can be effectively carried out by teachers with the involvement of parents and other family members.

Some of the important principles on which language and communication programs are based are given below.

1. Language and communication learning takes place in the routines of interaction between adults and the child such as routines surrounding dressing, feeding, washing and so on. These activities can be called as "joint action routines".

2. Mentally retarded children need to be given opportunities to interact with others, so that they may need to learn how to initiate a conversation, how to choose and maintain a topic, how to guess what other person knows, how to wait for their turn and how to close a conversation.

3. Language learning involves both comprehension and expression of sounds, words, sentences, gestures and their use. Any intervention which focuses on only production of speech is clearly inappropriate.

4. In the social environment, play activities form major learning modes for children and should be made use of optimally.

5. It is essential to emphasize all forms of expression, speech, gestures, signs, communication boards, and emphasis must not lie only with "speech".

6. The whole process of intervention has the child in focus, ie., selection of targets and activities should be suitable to the child's level and problems rather than adult's wishes.

7. The social basis of language gives importance to the interaction of the child with the caregiver. The aspect that is of importance is the way and how much the caregiver provides speech and language stimulation (input) to the child.

   A major aspect of the "facilitative" role adults play in acquisition of language and communication by both normal and mentally retarded children is the modification of the child's environment. Modifying the environment leads us to create an effective "communication context". If one learns to incorporate aspects relating to crate a communication context, then teaching strategies would help the child in acquiring effective language and communication. Some of the more active interaction patterns are mentioned below.

TECHNIQEUS

Expansion

This occurs when the child's utterance is expanded into the correct grammatical form.

Child: "Mommy car"

Adult: "Yes, Mommy's going in the car"

It has an effective way to teach language. Adding something to the words the child has just produced confirms that his response is appropriate, and takes him slightly beyond the response, modeling extra grammatical forms just when he is most attentive. However, some researchers argue that expansions may simply be functioning as a back channeling device to confirm the adult's understanding of an utterance.

Simple Expatiation

The adult makes comments about the child's utterance, but keeps these relevant to the utterance.

Child: "Mommy, look doggie"

Adult: "Yes, that's a big doggie"

As the child sets the topics, the adult responds relevantly, encouraging continued communicative exchange. So often we tend to make irrelevant comments, blocking any further discourse. The child says, "Car go" and we respond, "What color is the car?".

Alternative model

When we enquire about the meaning or logic of an utterance, we encourage the child to think of alternative ways to express his ideas.

Child: "I've got a plaster"

Adult: "how did you hurt yourself?"

Asking relevant questions of children (following their statements) is far more effective than trying to initiate conversation by asking questions. How often do we hear asking a child questions such as "What did you do at school today"? What's happening in this picture?" It is not helpful in teaching language to ask this type of questions, as it offers no syntactic leads.

Discourse with a language-disabled child needs to be planned according to the structures to be elicited. Asking, "What are the children doing?" will elicit the morphological marker – ing ("jumping"). Demanding the full clause, "The children are jumping", as a response is not in accordance with discourse in context (see forced alternative, below).

Imitation – or "Say what I say"

Most writers acknowledge that imitation tasks per se are of limited value. Only when the children assume an active role by deducing rules from the language which has been modeled by the adult, will the child internalize and generate language. For example in verb form development, the child begins to apply /-ed/ to a few words appropriately, and then generalizes this morphological marker to all pass tense situations – for example" goed; eated. He then imitate some irregular verbs and begins to use these correctly. All adult efforts to each `went' and `ate' are futile until the child himself has deduced these rules. Therefore, imitation is active and selective and involves comprehension.

Points out the child's error, and then providing an appropriate form

Child: "Me want…."

Adult: "No, its not me want…say "I" want"

It is interesting to note that adults rarely correct structural errors in children's speech during spontaneous communication, but rather concentrate on errors of fact. Remember that errors do not always indicate disability, as has been pointed out in the example cited under imitation above. Natural errors may form part of the process which a child undergoes in order to deduce rules.

Dialects and language changes in communities differ from "Standard" Language. Attempting to change or correct these structures may have a negative effect on a child who is just beginning to learn the value of communication.

Completion

Children are encouraged to complete items presented by an adult. For example, "The girl wears a dress – the girls wear…."

This may serve to teach grammatical rules or to increase vocabulary. Completion tasks may be difficult in Indian languages.

Replacement

The adult presents a sentence, and the child must replace an element or leave it out:

Adult: "The chair is big"

Child: "The chair is old"

Alternative Replacement

In this exercise a grammatical form must be replaced by a different form. For example, the child is asked to reproduce in the present tense a list of words taken from verbs in the past perfect tense.

Revision

Sentences are presented to be combined into new units. One way of doing this is to combine simple sentences using conjunctions.

For example, "Choose the appropriate conjunction – and /but/ if because – to join up these sentences".

The Forced Alternative

This technique is described in detail by Crystal et.al., (1976). The basis of the adult stimulus is formulated: "Is it X or Y?" – the linguistic model is supplied, but the child needs to use both cognition and his already acquired linguistic skills to select the answer. If the forced alternative is at the appropriate level for the child, he will be able to respond.

Any grammatical form can be selected as the focus.

Target: Verb

Adult: "Is the man sleeping or is he jumping?"

Child: "Jumping"

Target: Subject and verb

Adult: "Is the man sleeping or is the boy jumping?"

Child: "The boy is jumping"

This is an excellent technique, since it complies with the rules of discourse and is flexible. But it also enables one to focus on the specific structure requiring remediation. Perhaps the input is too complex by the time the child reaches this stage.

Verbal Absurdity

This has been found to be the most useful method of eliciting language forms. Incorrect statements or ridiculous questions are used to encourage the child to recall lexical items or correct grammatical structures.

Example: Point to a model pig and say "This is a cow"

Indicate that you are joking and encourage the child to name the object correctly. Be careful not to do this until you are sure the child has learned the names of farm animals and can differentiate between them.

Show the child that his own output was communicatively inadequate.

TARGET:

SVO (Subject Verb Object):

Daddy is kicking the ball.

Child: "Daddy ball"

Adult: "Daddy is eating the ball"

(Miming the statement adds an extra dimension).

Acting out the child's commands

This is another way to show the perspective of the listener.

Activity:

Instruct the listener to place objects in specific locations – put the ball under the table and the car on the shelf.

Child: "put the ball table".

Adult: Indicate, by acting out the instruction and using the forced alternative, that the message is incomplete.

"On the table or under the table?"

Silence

So seldom do we allow children the opportunity to retrieve the structure they are trying to recall before we intrude. Grant the child the time to utilize his own strategies for language retrieval.

Silence, coupled with physical immobility, is also an effective tactic to encourage a conversational partner to act. Hold that mechanical toy out of reach, wind it up and sit immobile waiting for the child to command it to "Go, before you set it in motion".

Using one modality to cue another

Sign language (or the use of manual code) is effective in assisting the recall of the verbal symbol through the use of another language modality.

Varying the contexts of the concepts to be learned

Teach each new concept within varied contexts.

TARGET

The adjective "soft"

Activities:

Allow the child to see and feel a soft toy, soft cotton wool and sit on a soft cushion. These must be contrasted in turn with hard objects.

Mastering a language is hard work for both pupil and teacher. However, there is no reason why it should not be a game, an adventure an interaction between two people allowing for the discovery of one another and of their own exciting hidden resources.

Non Linguistic Strategies – Preparatory to Specific Speech Acts

A major goal is to increase the frequency of self initiated language on the part of the child. Too often, clinical discourse is unbalanced with regard to interchanging of initiator and responder roles. Typically, it is the clinician who initiates language and the child who responds to language.

When a child initiates a communicative intent, the clinician becomes aware of what the child perceives as the important content for discussion. In turn, this information enables the clinician to make use of such language facilitation strategies as expansions and questions with greater sensitivity to the child's conversational role. Also, it is possible to construct non-linguistic events that increase the likelihood that the child will initiate a specific speech act or attempt to code a targeted semantic-syntactic interaction.

Communicative exchange: (The clinician begins to "paint" using paint powder, intentionally failing to have children mix the paint powder with water).

1. Child 1: "Hey not do the water (protest/comment)."
2. Child 2: "Bout water (request for information/action)."
3. Clinician: "Oh, I forgot to put the water in" (expression/statement).
4. Child 2:"Bout paint too?" (request for information).
5. Clinician: "Yeah, I forgot to put that water in" (statement).
6. Child 2: "Put water in, put paint in" (directive)

Language objective: To code time using and, to describe a process or give a directive.

Communicative exchanger (The clinician begins to turn on the blender before placing the lid on it).

1. Child: "No" (Protest).
2. Clinician: "What?" (request for information)

3.   Child: "Put the top on" (directive)

4.   Clinician: "Put top on and then turn on" (directive)

5.   Child: "Put top on then turn on" (directive)

1.8   NON VERBAL COMMUNICATIONS

If you observe persons speaking to others (including us) we might notice a lot of changes of hand movements, facial expressions, body positions, as we speak, which make us understand the speaker better. Imagine speaking with folded hands, unmoving on a chair to somebody! These additional actions we do along with speech are informally done, all the time. If we formalize these actions and add specific elements into a system, such as a set of signs and gestures using hands, or a board with pictures for communication the method can be called as non verbal communication.

Have you observed 2 deaf persons talking to each other? You might have watched a sign language in use.

The non verbal systems can be grouped into 2 main areas.

1.   Unaided communication systems and

2.   Aided communication systems

Unaided systems require movement of the parts of the body-arms, hands, fingers etc. They do not require any equipment or device. The examples are sign language system, such as British sign language, American sign language. Aided communication requires some sort of external device or aid for assistance. For example picture charts, electronic devices, communication boards. Most of the systems are representative of spoken English in varying degrees and arguably English is not the widely spoken language by mentally retarded persons in India. The gestures and signs are highly culture specific and differ in geographic locations. The systems like sign language are not widely used and are not accessible. Added to these are the problems in training others (listeners) to understand the systems. Mentally retarded children require that the systems be simple in their abstractness and be limited in number of elements used. Keeping these problems in mind the gestures and communication boards appear to be more applicable.

Remember the following principles, while interacting with your students:

1.   While selecting an activity always remember that you must choose an activity which will interest the child, give the child time to learn. Respond to the child if he is trying to get your attention. Always do the activity together.

2. Let the child imitate your actions. If he can't fully do the task, encourage him to do it in parts but you need to demonstrate and give physical and verbal prompts and gradually withdraw till he has learnt on his own.

3. While you do the activity take turns. You may make turn taking games out of things we do everyday.

Activities

1. Go for nature walk, naming trees, flowers and so on. Back in class/home show pictures of the things named outside and develop conversation.

2. Ask the students to find three items in the room and bring them to you and name them, describe them based on the language level of the child.

3. Play tape-recordings of various sounds having students raise their hands each time they hear an animal.

4. Read a simple story, ask questions and help children answer the questions and vice-versa.

5. Play recordings of different sounds in the environment and have children identify and name the sounds.

6. Have the children perform simple tasks in the class. Eg. Ring a bell, get a glass of water, etc.

7. Give the child sequential directions to find an object in the classroom.

8. Orally, present a list of three words. Two should be related in some way. Ask the children which ones are related and why.

9. Make a story. The teacher supplies the first sentence. Each student adds a sentence to build the tale.

10. Children may be allowed to share their happy experiences with others and respond to their questions.

11. Place an object in the center of a small group and have each one tell about the object.

12. Encourage singing activities.

13. Borrow two sets of telephones and encourage children to talk to each other.

14. Have a puppet show. Let children interact with puppets.

15. Encourage children to role play situations like there is fire or somebody is hurt. Children will plan amongst themselves and act.

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16. Encourage children to imitate each other's voice qualities and word patterns.

1.9 UNIT SUMMARY

The child with mental retardation is slow at learning but by identifying his needs and structuring an appropriate teaching programme for him, it is possible to teach him many new skills including COMMUNICAITON.

He need to understand in what way, the child's speech is abnormal? What are the specific features of the disorders? After having done the correcting diagnosis, an intervention programme needs to be planned.

- To understand delay or deviation in language development one must know the stages of language development since birth. It ranges from undifferentiated cry to forming sentences.

- Children, based on their cognitive ability and sensory motor ability develop language in varying rate and speed.

- Language does not develop in isolation. Every situation can be used as a language learning situation. A teacher should consult language therapist and get support. The teacher should plan classroom activities to enhance verbal and nonverbal communication.

1.10 CHECK YOUR PROGRESS

I. State the following at true or false.

a. Communication is a two-way process.

b. A child who has no speech, can communicate.

c. Communication is difficult for slow learning child because his brain is not fully developed.

d. Communication is usually affected in children with mental handicap.

e. Re-occurring cold and cough can develop into an ear infection.

f. Infections are curable.

g. Infections can be cured by putting oil in the ear.

h. Infections can cause hearing loss.

i. Infections get cured by themselves.

j. Hearing loss can be cured when infection gets cured in most cases.

II. Tick the correct answer.

    1. The two-way process involves

        a. expression/understanding

        b. expression/talking.

    2. When does the child utters his first word.

        a. 6 months.

        b. 12 months.

    3. A child speaking Tar for car is known as

        a. receptive language.

        b. Misarticulation

III. Name 3 methods of communication.

IV. Give two reasons why people communicate.

V. What is receptive and expressive language. Give 3 activities to develop these areas.

1.11 ACTIVITIES/ASSIGNMENTS

1. Observe a child with mental retardation and note his comprehension difficulties. Compare these with those of a child who has normal intelligence.

2. Read the dialogue between Bittu and his friend and write down the problems of comprehension and expression which emerge in this.

Friend	:	Bittu, give me your bat.
Bittu	:	(bring his ball and says) Bo, bo.
Friend	:	No, I do not want your ball. I want your bat.
Bittu	:	(looks confused) and repeats Ba, Ba.
Friend	:	(Gestures a bat) and says bring bat.
Bittu	:	(Runs to his room brings the bat and says) I Ba.
Friend	:	Yes that is a bat, not Ba You can! Bat !
Clue	:	Notice Bittu's poor instruction following ability.

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Notice his decreased vocabulary where he does not know the word Bat but could follow the gesture for Bat.

Notice his unclear speech and inability to say /l/ and /t/ as in Ball and Bat.

Notice his good communication ability, when he wants to bat, he manages to convey it the friend.

3. Have you seen people/children wearing hearing aids? If yes, find out and note which are the different types of aids which are in use. An audiologist will give you the actual facts of hearing aids.

1.12 POINTS FOR DISCUSISON/CLARIFICATION

After going through the Unit, you may have some doubts which need further clarification or you may have some of your own observations. Note these here.

1.12.1 Points for clarification

_____

_____

_____

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_____

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_____

1.13.2 Points for discussion

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_____

1.13 REFERENCES/FURTHER READINGS

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UNIT 2:CURRICULUM DOMAINS AT PRE-VOCATIONAL LEVEL

STRUCTURE

- o **Introduction**
- o **Objectives**
- o **Team work – the concept**
    - Multidisciplinary team
        - Role of multidisciplinary team
    - Inter disciplinary team
    - Trans disciplinary team
- o **Referral agencies and linkages**
- o **Networking and follow-up**
- o **Coordination**
    - National level
    - State level
    - Local level
- o **Unit summary**
- o **Check your progress**
- o **Assignment/Activity**
- o **Points for discussion/clarification**
- o **References/further readings**

2.1   INTRODUCTION

Mental retardation is a condition requiring intervention from professionals of various disciplines. Look at any standard special school. It has on its staff, a medical doctor, psychologist, speech pathologist, physiotherapist and/or occupational therapist and social worker, full time or part time. The special teachers are responsible for the educational programming, but they need the support of the above mentioned professionals. Each child has a combination of limitations requiring intervention, for smooth progress towards independent living. You have also seen in this block in the first three units, the role of physio, occupational and speech therapists. This unit will help you to understand the various team approaches, their advantages and limitations and how to develop linkages at various levels for successful functioning of the team.

2.2   OBJECTIVES

On studying this unit you will be able to

- define and explain interdisciplinary, multidisciplinary and transdisplinary team approaches.

- Demonstrate knowledge regarding referral agencies and linkages

- Describe networking and follow up.

- Narrate coordination needs at national, state and local levels.

2.3   TEAM WORK – THE CONCEPT

Every child has the right to education including those with disabilities. A special educator, therefore, is a key person working with children having special needs. Those with disabilities need intervention from early childhood to adulthood. Those who cannot reach a school due to disability also need services reaching them. This brings us to the questions of who are the eprsons along with the special teacher who help those with special needs - in our reference, those with mental retardation?"   ,

As seen earlier, we need the team of experts, beginning with a medical professional, as every parent goes to a doctor first when they find `something wrong' with their child.   The   doctor   inturn   takes   the   specialist   support   of pediatrician/psychiatrist/neurologist for further assessment and diagnosis.   For reliable diagnosis the support of psychologist and special educator are required.

Once diagnosed, the parents are counseled and explained about the condition and probable course of action.

The advantage of team work is that the team members work together and understand the child's strengths and needs. The information gathered by each of them is shared among themselves to arrive at an overall picture of the child's level of functioning. They discuss the findings with the parents. Ideally, the course of action with regard to recommendation for treatment or training will be evolved with parental consent.

Based on the needs, the person with mental retardation requires intervention, family counselling, vocational counselling physio/occupational therapies, speech therapy and special education and/or rehabilitation measures. One professional cannot possibly do all the above-mentioned tasks. Now this brings us to the understanding of the reason for a team

The Team

You must understand the role of each professional in the process of assessment and intervention so that **you** know where and how you fit in the team.

Psychologist

Psychologist is a professional trained in the science of human behaviour and learning and is competent in assessment and management of cognitive behavioural, emotional and social aspects of a persons in need of help. A psychologist conducts intellectual assessment, gathers relevant back ground information from the family, carries out other assessments involving socio-emotional, vocational aspects and reports. He/she is also competent to counsel the parent suitably regarding the child's condition and guide them for intervention. As you know, many mentally retarded persons have maladaptive behaviours. As a team member the psychologist can assist in management of such behaviours scientifically.

MEDICAL PROFESSIONALS

A number of medical professionals may take part in the initial team assessment and following interventions. A pediatrician is concerned with medical assessment and management of medical problems. A psychologist will focus on emotional, behavioural problems, and help the teacher and family cope with/overcome the problem. A neurologist is many a time a team member as many mentally retarded persons have neurological problems like epilepsy. A geneticist, ophthalmologist, orthopedician or ENT specialist may sometimes be part of the team based on the mentally retarded person's needs. Oral hygiene is important and therefore a consultant dentist is a need in the management team.

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THERAPISTS

Speech and language therapist, physiotherapists and occupational therapists are essential in the team that works with mentally retarded persons. The earlier three units of this block gives you the details on the role of the therapists.

The special educational service can also include play therapist yoga therapist and music and movement therapist in the school programme as it is well known that such activities have therapeutic effect. These therapists are needed only after the initial assessment, certification and management plan is carried out.

SOCIAL WORKERS

In many service settings, social worker is included in the team who serves as a link between the family and the professionals. Initial case history taking and serving as a `case manager' is in many settings carried out by the social worker. If needed, she makes home visits, contacts other Government and NGO for providing support to the child if needed and keeps the family informed of the Government schemes, benefits and concession that are announced from time to time. She also serves as a counselor.

SPECIAL EDUCATOR

In the western countries, it is usually the practice to have the special educator as the case coordinator for children in school going age. She is responsible for special educational programme after contacting the various team members and planning the programme for intervention. Though a class teacher, her constant contact with the team members is essential for a programme that is beneficial for the child.

VOCATIONAL INSTRUCTOR

As done by special educator in the school going age, for adolescents in their later years and adults, vocational instructor takes the role of case coordinator. He is responsible for job identification, placement and follow up. He is also responsible for training in vocations after finding out the aptitude and interest of the client. Programming for low functioning, non-employable person with mental retardation is a challenging task which is also carried out by the vocational instructor with the team support, especially, the occupational therapist and special educator.

Note that all individuals with mental retardation will not need the help of all team members. Depending on the need, the teams are formed. The core team members

however will consist of a medical professional, a psychologist and a special educator.

The team approaches/models vary in interacting with the family or the concerned others for the programming for the client. The approaches can be 1) multidisciplinary approaches, 2) interdisciplinary approaches, 3) transdisciplinary approach.

2.3.1 MULTIDISCIPLINARY TEAM

Organization: The term 'multidisciplinary' is self-descriptive. Professionals with expertise in different disciplines examine and work with the child individually. The professionals within the team work in isolation from other professionals to evaluate and serve children. Best characterized by co-existence the multidisciplinary approach was designed to cater to patients within medical setting (Hart 1977) whose problems are typically isolated to one particular domain.
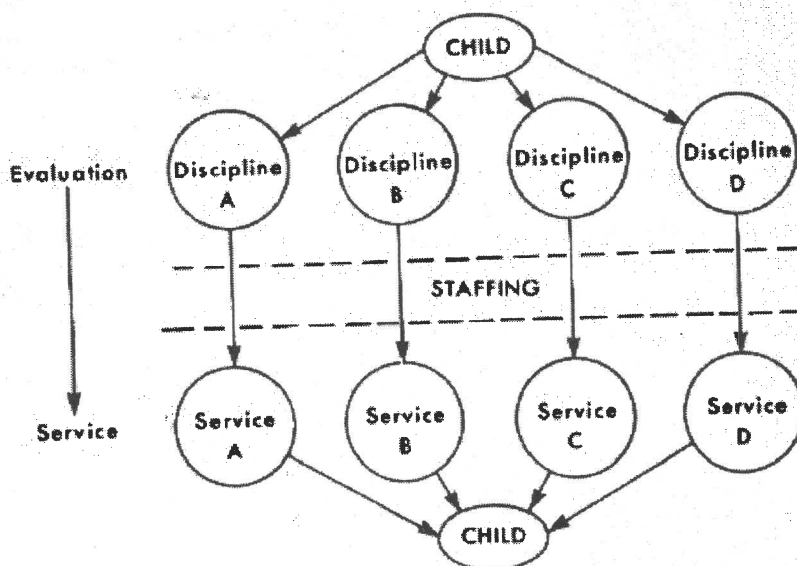

Diagram: Organization of Multidisciplinary Model of Service Delivery

(Source:Orelove & Sobsey (1987))

4.3.1.1 Role of multidisciplinary team

Each child is unique. The programme designed for one may not be suitable for another. The programme, which is prepared, must be tailor-made, and should meet the needs of the child. Therefore comprehensive programme has to be developed.

There should be a cooperative approach to develop a compact programme. All professionals in a multidisciplinary team should move in the same direction working towards the goal. Confusion will prevail if different professionals work with different goals.

Finding out what rehabilitation disciplines are required is the first step. "Who needs what" is important. Often, rehabilitation is concerned with related influence of health, education, economic and social dynamics of a person with disability. That is why the child's programme needs contributions from different disciplines. Communities rich in resources should be in a position to employ specialists qualified in respective disciplines to participate in the services. Advocacy refers to promoting the rights of or introducing programme on behalf of a disadvantaged individual or group in an attempt to improve the quality of their lives.

(a)   Client can be a partner in the enterprise.

(b)   Actions are taken on behalf of clients only when it has been determined that the client cannot act or organize resources independently.

Advantages and Disadvantages

Advantages

In a multidisciplinary approach all needs of the child are taken into account. All the therapies, educational and social cultural involvements will be taken care of. Each professional will look into the needs of the child and develop programme for him. For a disabled child, teamwork is essential to rehabilitate him.

Disadvantages:

Assessment and educational planning have major disadvantages in the multidisciplinary team approach as applied to educating the children with disabilities.

The more the team members work in isolation, the greater the likelihood, that they will generate information that fails to take into account the whole child. Students with multiple impairments often have motor, sensory and communication deficits but a single professional rarely is trained to be proficient in all areas. When professionals of different disciplines evaluate a child and give recommendations, the chance of opposing suggestions is great (Hart 1977). Recommendations from multidisciplinary teams are often numerous and complicated, making their implementation extremely difficult. Suggestions for educational programmes may result in

conflicting ideas. The team members usually, end their responsibilities by giving recommendations, leaving the actual implementation to the classroom teacher (Hart 1977).

2.3.2 Interdisciplinary Team

The interdisciplinary model shares a major feature of the multidisciplinary approach. Initial evaluations of the child are performed individually by each professional (Hart 1977, Mc. Cormick &Goldman 1979). The programming decisions of this model are made by group consensus. However implementation remains specific to each discipline. That is, while progarmme planning is more collaborative, programme implementation is still isolated.

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        ┌──────────────────────┐
        │        CHILD         │
        └──────────────────────┘
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   │           DISCIPLINES            │
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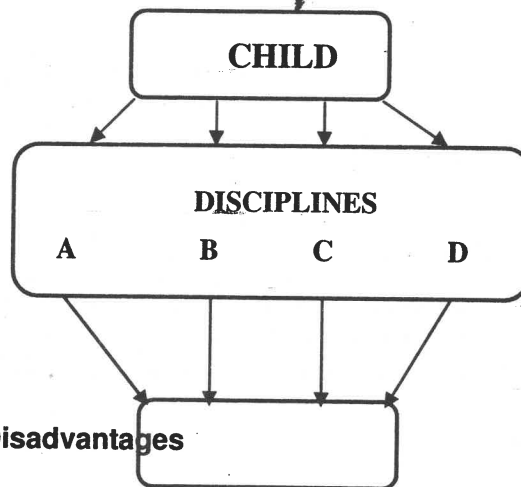
CHILD

Advantages & Disadvantages

Advantages

In an interdisciplinary team approach, the child has the advantage of assessment by each discipline thoroughly. It is observed that the interdisciplinary model supports group decision making a great opportunity for interactions across disciplines.

Disadvantages

This model supports group decision making and greater opportunity for interaction across disciplines in theory. In actual practice, responsibility is usually diffused. Also there is absence of immediate feedback or long term, follow-up built into the model (Hart 1977).

The multidisciplinary and interdisciplinary team approach have one thing in common called the "Isolated therapy model". This term

refers to the delivery of therapy services outside of the setting in which students are expected to perform the skills that are being taught. Isolated therapy settings usually consist of special therapy norms.

Problems with the isolated therapy model are as follows:

(a)   As the skills are not assessed in the natural settings, the results may not be the representative of what the student can do in those settings.

(b)   Assessment often tests specific isolated skills instead of clusters of skills used in daily activities.

(c)   The assessment frequently results in diagnostic labels and deficits in student's performance, but fail to include suggestions to remediate skill deficits.

(d)   When team members work in isolation it is difficult to collaborate on performance of individual students in natural situations.

(e)   Because of limited staff and time children may receive small amount of treatment in such vital areas as mobility and communication.

2.3.3 Trans Disciplinary Team

This approach as a model has been used successfully with children with multiple disabilities. This originally was designed to serve high-risk infants and later has been embraced by programmes for educating children with multiple disabilities. The model is characterized by a sharing, or transferring of information and skills across traditional disciplinary boundaries. This model incorporates an indirect model or services whereby one or two persons are primary facilitators of services and other team members act as consultants. In practice, within school setting the teacher usually assumes the major direct service role with support staff serving as consultants.
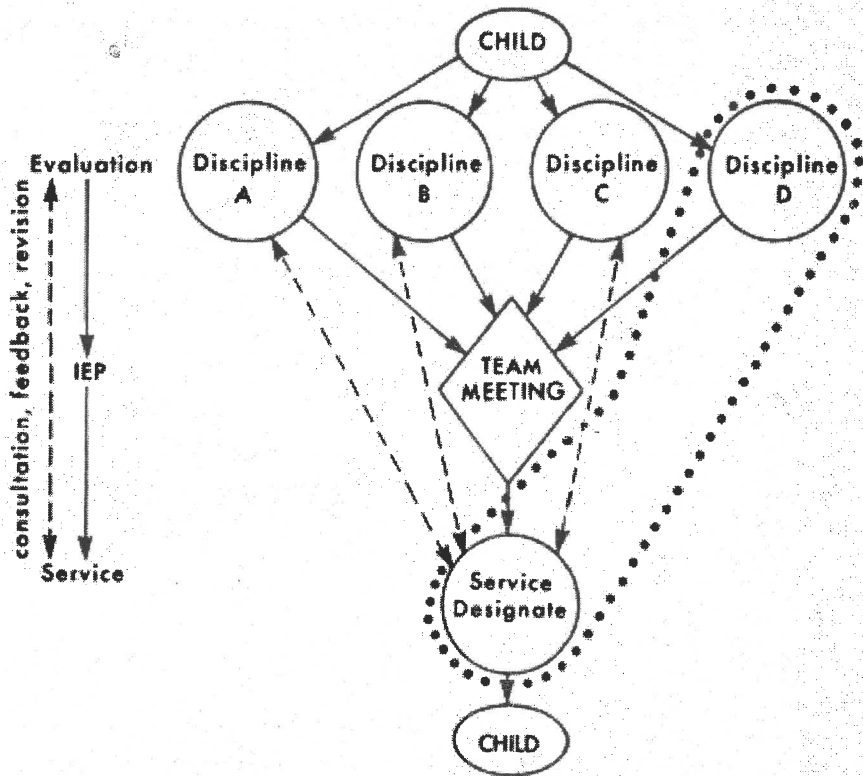
Diagram – ORGANIZATION OF A TRANS DISCIPLINARY MODEL OF
SERVICE DELIVERY

(Source: Orelove & Sobsey (1977))

Advantages

- Transdisciplinary is a functional approach to assessment and intervention. Parents, therapists and educators are actively involved through out the process. The model is less stressful for the child, less intimidating to the family and results in meaningful information that readily translates into objectives and strategies for intervention. As a multidimensional approach to assessing young children, transdisciplinary approach meets professional requirements which address the diverse needs of children and families.

- Transdisciplinary approach is conducted in natural environment and is conducive to eliciting the child's highest skill level. A natural environment is where the child feels comfortable to do the best. The therapist interacts with the child directly.

- While standardized tests follow a prescribed set of tasks in a standardized manner, functional assessment and task analysis allow different sets of materials, varying conditions, variations in language and alteration of sequence and context depending on the child's needs.

- In transdisciplinary approach all team members observe the same behavours at the same time.

Major features of a transdisciplinary model

a) Indirect therapy model: The four basic assumptions of an indirect therapy model are

1. Assessment of motor abilities can be best conducted in natural environment.

2. Students should be taught clusters of motor skills through games and functional activities needed in daily living activities.

3. Therapy should be given throughout the day and in all settings in which they occur/in which the student functions.

4. Skills must be taught and verified in the settings in which they occur naturally.

b) Role: The term 'role' refers to sharing and exchange of certain roles and responsibilities among team members.

There are three major areas within educational programme in which the choice of a team model has a direct influence – assessment, development of instructions and teaching or therapy services.

1. There are three different types of assessment information (a) by collecting general background information, which should be shared by all the professionals (b) by observing the student in natural environment (c) by collecting child specific information.

Development of goals - once assessment is over, the team must;

1) Prioritize the goals to be taught to each student, taking into account diverse consideration such as need, students age, his preferences, parents preferences, the skills significance and so on.

2) to write goals in appropriate manner in consultation with all the team members.

3) Instructional programme and therapy: once goals are divided, instructional programmes and developed therapy services will be formulated.

A primary instructor (special teacher) will provide instruction in each environment and regulate services.

The team will determine the other members who will work with the instructor.

Disadvantages

Professionals who try to implement the model frequently face a variety of barriers. Differences in philosophy and orientation. Differences in professional jargons may cause difficulty in communication, and isolation of parents from the team.

The problems, which the team members face, are as follows:

- Ambiguity about each one's role

- Professionals may not have trust among themselves

- Threat of being questioned by other professionals.

Administrative difficulties include

- failure to understand the approach due to its complexity and logistical demands, hence it is often misunderstood and implemented incorrectly

- resistance to change from an old service delivery model.

As all the three models/approaches have merits and limitations, it is upto the organization to decide which model is suitable for their use, after considering their need, locality and resources. An eclectic model is also acceptable as long as it meets the need.

2.4 REFERRAL AGENCIES AND LINKAGES

No organization can work in isolation. As man constantly interacts with his environment so does a person with metnal retardtion. For him to become an effective contributing member of the society, the team which trains him should have proper linkages. To start with, let us look at the parents. They are the major support to the retarded person and they need to know the various sources and resources they should contact for helping their child with special needs. The team should be well informed about the various referral agencies and linkages.

The various referral agencies include District Medical Board, Rehabilitation Officer, Commissionerate of Disability, the special schools and other service models run by Government and NGOs in the area where the child resides, Community Based Rehabilitation services, vocational training and employment options, the various government policies, schemes and benefits that enhance the services and above all, various parent support groups. If such linkages are established, the team will be able to refer every child in need for appropriate services. All organizations are not equipped with all service facilities and therefore, linkages are necessary to get support or refer clients for support.

2.5 NETWORKING AND FOLLOW UP

After identifying the links, the organization should develop a system of networking with them. There should be regular contacts with other linkages, periodic meetings to update on developments and exchange views. Individually or collectively meeting the state/central government agencies to discuss trend changes and the need for changes in policy help the Government in making decisions.

When cases are referred for certification or services, there should be a proper format and system so that the efforts are documented. This will also ensure receiving feedback from the referred agency. The special teacher should ensure that her student receives all services required by in addition to class room teaching. She should maintain linkages and network with other professionals within the school as well as the Government mechanism outside the school. For instance, if children are referred for certification or bus or train travel concession, she should follow up to see that the child receives what he deserves to get. She should be aware that the Commissioner of Disabilities has judicial powers and help parents understand and use if needed. She should constantly update herself on the developments, establish contacts and follow up issues, to find solutions.

2.6 COORDINATION

As we have seen, services for disabilities are like a number of pieces of a puzzle, which need to be consciously and purposefully put together to complete the picture – in this case, rehabilitation of a child with disabilities. With one piece of the puzzle missing, the picture is incomplete. To do this job effectively, there should be proper coordination at National, State, District and Local levels in terms of communication and resource management.

4.6.1 National level

You have seen in SESM 01 Block 3 Unit 2, the details of PD Act (1995). It describes the various committees at each level. The Central Coordination Committee has the chief coordinator of disabilities at central level and each state is expected to have State Coordination Committee with Commissioner of Disabilities. Similarly there are National Trust Act, National Policy on Education, Schemes like National Handicapped Finance and Development Corporation, (NHFDC), National Programme for Rehabilitation of Persons with Disabilities (NPRPD) and many other schemes. Every professional should be aware of the various schemes and policies and how they reach the person with disabilities. Some reach directly like the train travel concession, while some are routed through the State Government like the District Primary Education Programme (DPEP). The mechanism of the functioning of Natiional Level Programme should be understood by the teacher as she is the link between the family of mentally retarded child and the professionals or policy maker. Through her organization, she should coordinate to get benefits for the disabled persons. She should constantly update herself as the developments are rapid in the field of disabilities.

2.6.2 State level

As mentioned earlier, every state implements some of the National schemes. In addition, all states have their own schemes for persons with disabilities. The schemes vary in each state. Maharashtra state for instance, has a policy that RCI recognized special teachers will receive Government pay scale. Not all other states have implemented this yet. Such decisions reflect on the quality of teaching staff (and therefore, the quality of education) received by the student. Direct benefit to children with disabilities include, bus travel concessions, maintenance allowance, distribution of aids and appliances and so on (See SESM 03 Block 4 Unit 3).

What is important for an organization is to understand the various schemes, how it operates, what are the eligibility criteria and whom to contact to receive it. This will help them in informing the parents of mentally retarded person who inturn can get the benefit for his child.

2.6.3 Local level

In every village there will be Government and Non-government groups and agencies that work for the welfare and upliftment of the people. Essentially every village will have a Public Health Centre (PHC) and a primary school. In addition, there will be a Village Education Officer, PHC Doctor, Anganwadi workers, Nutrition and Health workers. Sensitization and training to these functionaries can help in prevention and early detection and referral of disabled persons in the village level. Women groups, Sangams, Parent groups, adult literacy groups, Human rights groups and such other allied groups can be certainly oriented towards basic information on detection and referral of persons with disabilities.

Vikalang Bandhu has been innovative programme of Government of India where disabled persons from the villages are trained to carryout awareness, detection and referral programmes in their villages. They are supported by the existing systems within the village. The programme is yet to take off in full scale in the country.

India being a country with 75% rural population beginning at local level with services seem apt for reaching out to people with disabilities.

2.7 UNIT SUMMARY

- Team effort is essential to meet the needs of a disabled child as a whole.

- There are three different service delivery models (a) multidisciplinary, (b) interdisciplinary and (c) transdisciplinary.

- Each has its merits and limitations. The users should be careful in selection.

- To provide services to mentally retarded persons, there should be proper networking and linkages established owing to the nature of the condition.

- Proper coordination at National, State and Local levels is important for effective networking.

2.8   CHECK YOUR PROGRESS

1.   Explain the following briefly
     (a)   multidisciplinary approach
     (b)   interdisciplinary approach
     (c)   transdisciplinary approach
2.   Name the members of a team working for persons with mental retardation.
3.   What are the various linkages for networking.
4.   Name two facilities each in the following levels.
     (a)   National
     (b)   State
     (c)   Local

2.9   ASSIGNMENT

1)   Select a village and find out existing agencies for networking for the detection and referral of persons with mental retardation.

2.10   POINTS FOR DISCUSSION/CLARIFICATION

After going through the unit you may have further discussion on some points and clarification on others. Note down those points.

2.10.1 Points for discussion

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2.10.2 Points for clarification

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Unit 3: Curriculum domains at Vocational level

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**

- **Introduction**

Since its conception in the late 90s, the Prevocational Education has been providing a second chance to pupils who have failed the CPE or who are above 13. The children complete a 3 year program in secondary schools and follow the NTC Foundation Course run by the MITD. While the project has yielded some positive results, it has also shown some systemic and process-related weaknesses. The Education and Human Resource Strategy Plan (EHRSP) 2008-2020 has highlighted the need to revisit the Prevocational Education so that it is more responsive to the future needs of the economy

Challenges

The major challenges pertain to addressing the issues of quality, relevance, achievement and the open up of opportunities for further development. Specific to these challenges, the following weaknesses need to be addressed: - Untrained teachers. Most of them have no pedagogical skills to teach students with major

learning difficulties. - Negative perception of prevocational stream. The project has led to a negative branding of students. - Lack of self esteem and self confidence among students. - High drop-out rates mostly in the 2nd and 3rd years. - Failure of many students to access the National Trade Certificate Foundation Course after three years of Prevocational Education. - Absence of formal certification. Whatever the children have learned is not recognized this acts as a demotivating factor for them to work hard

The aims of Life Skills at pre-vocational level are to: Ensure that students understand the importance of a healthy and active lifestyle.¬ Develop a range of movement and motor skills for a healthy and active life.¬ Develop a range of interpersonal and social skills through games and activities.¬ Develop an awareness of the past so as to understand the evolution of society to its¬ present state Inform students of their rights and responsibilities as active citizens for a¬ sustainable development Develop knowledge, skills and attitudes needed to preserve, appreciate and share¬ our multiple cultural heritages. Develop skills to deter behaviours and lifestyles associated with crime, drugs and¬ violence. Develop an atmosphere of peace and a sense of shared humanity. Demonstrate basic¬ assertiveness strategies to manage interaction with others Develop an understanding of the functioning of the human body.¬ Develop action competence to reduce vulnerability to health problems.¬

- **Objectives**

Assessment in Life Skills will be mainly formative and continuous. Students will be given activities and tasks to work on while teachers will provide regular feedback for improvement. Project based tasks and observation check lists will allow teachers to monitor students" progress and assess their improvement. Behaviour changes, social skills and attitudes will be assessed through observation checklists. It is proposed that the students be lead towards the development of structured projects that will integrate the different strands in Life Skills as well the other domains in the prevocational curriculum. They will be expected to apply the knowledge and skills acquired in the Life Skills domain to successfully carry out their project based tasks and activities as well as draw from the knowledge and skills from other domains to successfully complete the project.

- **Definitions**

In an expanding and more deeply integrated global economy, the comparative advantage of Mauritius will continue to lie in the skills of its people. To this end, the country is challenged to continuously improve its competitiveness by enhancing its creative, skilled and competent human resource base, amongst other measures Yet, while it is readily accepted that there will be a persistent and incessant need for higher levels of skills in the required number, it is also evident that there will be a parallel need for human resource investment across a wider range of skills. In this national development strategy, re-alignment of the education provision has therefore become highly important. Access to education is no longer enough. Strong foundations at the lower levels of the system must ensure that all children acquire confidence in their learning abilities such that they will succeed at the higher levels of the system, and be prepared to enter a competitive job-market with a respect and thirst for knowledge that will maintain them throughout their life. The only way to ensure this is by creating a culture of achievement throughout the system, and at all levels of the system. Education policies will hence continue to focus on the major pillars of increasing access, improving quality and broadening equity as well as creating a culture of achievement throughout the system. It is from this perspective that the current revamping of the Prevocational education subsector has to be seen

- **Summary**

Prevocational Education has witnessed significant changes since its inception way back in the nineties, although some action had been initiated to cater for CPE failures in the seventies. First implemented by the ex-Industrial and Vocational Training Board (IVTB) from 1990 to 1996, its management was transferred to the Technical School Management Trust Fund in 1997, in the context of the implementation of the 9-year schooling reform in the educational system. On 14 March 2001, the Prevocational Education (PVE) project under the control of the Ministry of Education was officially launched with the collaboration of other stakeholders, mainly the Bureau d'Education Catholique (BEC) and the Federation of Managers of Private 2 Secondary Schools, in the then existing 10 State Secondary Schools Vocational, 2 State Secondary Schools and 38 Private Secondary schools. The move also meant a shift from the trade-oriented courses in

Metalwork, Woodwork, Home Economics and Bicycle Repairs to more academic ones with the provision of textbooks to students

- **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

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Points for Clarification

Unit 4: Rehabilitation of PwIDs under National Skill development Scheme (NSDS by MSJ&E)

- **Introduction**

- **Objectives**

- **Definitions**

- **Summary**

- **Revision**

- **Assignment/Activity**

- **Points For Discussion And Clarification**

- **Introduction**

1.1   Persons with disability in India face many challenges when looking to develop employable skills and in gaining meaningful employment.   While India has ratified the United Nations Convention on the Rights of People with disability (UNCRPD), persons with disability continue to face many difficulties in the labour market.

According to census 2011, there are 2.68 Crore Persons with Disabilities (PwDs) in India (1.50 crore male and 1.18 crore female PwDs).   Even though, disabled people constitute a significant

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percentage of the population of India, their need for meaningful employment largely remains unmet, in spite of implementation of "The Persons with Disability Act, 1995". In the overall population, the number of disabled is proportionately higher in rural areas, accentuated by general poverty considerations and poor access to health services. The rural disabled are significantly disconnected from skills and markets.

Improving vocational training and employment opportunities for people with disability is a critical element for enhancing the quality of life for individual with disability, their families, but there are also substantial gains for the broader economy. There are substantial costs to individuals and to society associated with these poor employment outcomes for people with disability. The World Bank considers that leaving people with disability, outside the economy, translates into a foregone GDP of about 5% to 7%. In addition to the individual and family benefits, there is also a strong economic imperative to increased labour force participation which will help to address country's shortage of skilled labour force, while at the same time reducing fiscal pressures associated with welfare dependency.

- National Skill Development Corporation (NSDC).
- Vocational training courses offered by National Institutes of Department of Empowerment of Persons with Disabilities and its affiliate organisations like National Handicapped Finance and Development Corporation (NHFDC), National Trust etc.
- Ministry of Labour and Employment supervising more than 20 Vocational Rehabilitation Centres for Handicapped(VRCHs), more than 10,000 ITIs and more than 1000 Employment Exchanges.
- Technical and Vocational courses, being offered through Community colleges, IITs and Universities, affiliated with Ministry of Human Resources Development.

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- NGOs focusing on vocational training and skill development.
- Private sector training organizations: Under the CSR initiative, many organizations have done exemplary work.
- Public Sector Undertakings have also contributed substantially to vocational training of persons with disability.
- National Rural Livelihood Mission of Ministry of Rural Development.
- National Urban Livelihood Mission of Ministry of Urban Development.
- Vocational training / livelihood programs of other Central Govt. Ministries and State Governments.

- **Objectives**

2.1   The Scheme aims at providing financial assistance for skill training for persons with disabilities.

2.2   The scheme will cover Persons with Disabilities (PwDs) with not less than 40% disability and having a disability certificate to this effect issued by a competent medical authority.

2.3   **30% reservation for women candidates:** As an endeavour to encourage women, 30% of the total intake of each training program shall be earmarked for women candidates.

2.4   The scheme will operate through training institutions recognised by this Department as per the eligibility conditions contained in this scheme.

- **Definitions**

Our country is one of the few countries in the world where the working age population will be far in excess of those who will no longer be able to work. In 2020, the average Indian will only be 29 years old, compared with 37 in China and the US, 45 in West Europe and 48 in Japan. Therefore, when developed countries will be struggling with shrinking domestic demands and manpower shortages, India, with its huge demographic dividend, will be well positioned to become the sourcing hub of the world. The National Policy on Skill Development, 2009 recognising this opportunity, had set a target of skilling 500 million people by 2022. The new policy will also aim at achieving the target by focusing more on outcomes. Large-scale skill development and entrepreneurship programme linked to robust quality standards is thus an imminent imperative.

- **Summary**

2.2 It is evident that a major challenge of skill development initiatives is to address the needs of huge population by providing skills in order to make them employable and help them secure meaningful livelihood opportunities. This necessitates planned development of skills which is underpinned by a 'policy', that is both comprehensive as well as national in character. A national policy response is, therefore, needed to guide the skill development strategies and coordinated action by all stakeholders to avoid a piecemeal approach. It is also important that the policies of skill development be linked to policies in the economic, employment and social development arenas. 2.3 The development and articulation of a national policy on skill development must also be cognizant of the socio-economic realities at the implementation level. This will enable the policy document to reflect and articulate measures to address issues in a structured manner. The task of skill development and entrepreneurship has many challenges which include:- a) Mobilising youth to undergo skill development programmes, in the face of the traditional and cultural bias against non-white collar occupations b) Increasing capacity & capability of existing system to ensure equitable access to all- Determination of capacity that exist in the country c) Lack of a robust mechanism for monitoring and measuring outcomes d) Disharmony in the various skill development efforts - Creating effective convergence between school education, various skill development efforts of government and between government and Private Sector initiative. e) In the federal set

up, lack of a robust delivery mechanism at the State level f) Capacity building of institutions for planning, quality assurance and involvement of stake holders Draft – National Policy on Skill and Entrepreneurship Development Page 5 of 38 g) Increasing participation of stakeholders, mobilizing adequate investment for financing skill development, attaining sustainability by strengthening all resources.

2.3 3.1 The issues which the National Policy on Skill Development & Entrepreneurship seeks to address include the following: 3.1.1 Changing the negative perception associated with vocational education and focusing on mobilization of candidates on the same: A major challenge in the skills arena is the mobilization of candidates, partly because of the socio-cultural attitude towards bluecollared jobs. It is also evident that lack of awareness is a major reason for the relatively poor response to skill development opportunities. The skills policy envisages awareness generation and information dissemination on the part of all the implementing agencies be it the Central Government, state government or the private agencies. A major initiative would be made in creating and raising awareness among the target groups about the benefit of skill development, employment and learning opportunities and also about support schemes that enable them to participate in training. 3.1.2 Co-ordination and integration of all skilling efforts in the country: A large number stakeholders- ranging from central and state Governments, ministries, training providers, assessment agencies, industry bodies, and workers- are involved in the skill development space. Co-ordination amongst these various stakeholders often results in shortfall in implementation of skilling initiatives. Furthermore, the lacunae in establishing a clear skills supply-demand paradigm also limit positive impact in the resultant employment and productivity of the markets. Hence the NPSD envisages achieving effective coordination mechanisms at various levels 3.1.3 Outcomes approach focusing on both employment and employability : When viewed from the perspective of a trainee, the ultimate goal of any skilling exercise is to ensure socio-economic mobility. Better employment opportunities for the trainees are an effective way to gauge the effectiveness of any skilling initiatives. This can be measured in terms of a trainee's ability to move from the informal sector to the formal sector and/or a raise in remuneration post, etc. Employability- as demonstrated through skills of an individual- is intrinsically linked to achieving gainful employment. From the perspective of the employer, the prospective trainee/employee must deliver tasks assigned to him/her efficiently. The ability of an employee to perform tasks effectively rest on his mastery over the job role, which may relate to both core and soft skills. Thus, key objective of the policy is to enhancing employability such that it is reflective

on employment of trainees. 3.1.4 Improving the capacity and quality of Training Infrastructure, along with geographical and distribution of capacity sector wise and geography wise: Though the capacity that had been created by the private sector in the country is unknown, it is evident that the infrastructure is skewed in terms of both sector and geography. A survey would be Draft – National Policy on Skill and Entrepreneurship Development Page 7 of 38 conducted to know the capacity that already exists and how it is being utilized, so that the shortfall in capacity can be gauged and a plan for meeting this shortfall can be formulated and implemented. The objective of enforcing quality and relevance in skill development will also be realized through improving infrastructure, improving quality of trainer and developing National Skill Qualification Framework. 3.1.5 Quality assurance and linkages with the NSQF: Ensuring the quality of training is essential for all stakeholders within the skill ecosystem and the resultant certification is a validation and recognition of the same. Irrespective of source of learning, whether through formal or informal or on-the-job learning, the quality assurance against certain benchmarks will facilitate recognition of learning. The NSQF is an important institutional mechanism that ensures consistency of nationally recognised qualifications both for formal and non-formal skills based education and training. It accommodates experiential life-long learning through mechanisms such as recognition of prior learning, improves the alignment of formal and non-formal training programs with industry requirements; and increases options for students by broadening program and progression for learners through horizontal and vertical pathways. 3.1.6 Working closely with the private sector and the industry: Industry is an essential partner in skill development, and there is need to encourage greater participation from the private sector. The skill initiative in India has largely been a Government driven exercise. However, as a stakeholder, that will eventually absorb all the skilled manpower, the industry has an equal responsibility to participate in the skilling campaign. Successful models across the globe have indicated that inputs from the private sector should be at multiple levels of the skill value-chain, ranging from inputs to market information, to designing of occupational standards, to investment through apprenticeship and re-skilling to ensure trained manpower. Thus, a greater emphasis will be placed on the industry participation in the new policy. 3.1.7 Third party assessments and Certification: For meaningful skill development, there is a need for an independent and good quality third party certification, which would be adopted by institutes imparting skill development programmes as a means to bring accountability and regulation over training and assessments. This would promote professional and personal development of individuals. Apart from the formal sector, a large

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number of workers in the informal/unorganized sector have acquired skills through experience or other non-formal learning channels that are not able to derive proper market value for their services. The NSQF would facilitate certification to such persons to help them move into the formal sector jobs as long as they are able to perform to the outcome standards. This recognition of prior learning would empower millions of workers through formal recognition of their skills. 3.1.8 Address the special needs of difficult areas – NE, Hill States, LWE affected areas: The border, hilly and difficult areas, including the North-Eastern states, J&K, and the hilly Draft – National Policy on Skill and Entrepreneurship Development Page 8 of 38 forested areas of central and eastern India, face additional challenges arising out of inadequate infrastructure, poor investment and industrial opportunities. Special attention needs to be given to the youth residing in these regions to address their needs for employment and employability. In order to provide more equitable access across the country, special efforts will be mounted to establish training facilities in deficient regions. 3.1.9 Technology interventions in terms of LMIS and monitoring of outcomes: There is a strong necessity to design platforms that facilitate information exchange and mitigate information asymmetries. The labour market information system will be dynamic platform that will enable a range of stakeholders to access reliable information. In line with the national policy, it will retain trainees as the focal point of initiatives, however, it will also cover a range of stakeholders such a training providers, industry/employers, Government agency/policy makers, Assessment agencies, Certifying agencies, Funding agencies, International Agencies, Sector Skill Councils, Labour Market tracking agencies, Govt. &Private agencies. The information generated under such a system would be both quantitative and qualitative in nature. Furthermore, the aim of the system will be to accumulate data through varied sources that will be be analyzed to suggest corrective measures and forecast trends that will be linked to broad national development strategies, so that new and existing employment prospects and their skills requirements can be identified. 3.1.10 International equivalence and mobility of skilled manpower: The objective of the current exercise of skill development is not only to meet the domestic demands but also international markets. In a competitive global economy, trained manpower is an asset for employers, where an individual's skills must be a reflection quality and competitiveness. The policy seeks to create avenues for greater mobility through quality assurance measures that will be at par with international standards. To this end, recognition and portability of skills abroad is an important outcome of the policy. 3.1.11 Create opportunities for all to acquire skills throughout life, and especially for youth, women and disadvantaged groups: High inclusivity is one of the central visions of the

NPSD. The NPSD envisages skill development initiatives that will harness inclusivity and reduce divisions such as male/female, rural/urban, organized/unorganized employment and traditional/contemporary workplace. One of its key objectives is to ensure that the skilling needs of the disadvantaged and the marginalized groups like SCs, STs, OBCs, minorities, women and differently abled persons, as well as those living in difficult geographical pockets, are appropriately taken care of. 3.1.12 Develop a high-quality skilled workforce/entrepreneur relevant to current and emerging employment market needs

- **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 5: Implications of placement for inclusion in Community, Documentation, Record Maintenance and Reporting

- Introduction

- Objectives

- Definitions

- Summary

- Revision

- Assignment/Activity

- Points For Discussion And Clarification

- Introduction

A. Policy: provides policy for the delivery of special education programs and services in British Columbia. B. Roles and Responsibilities: outlines the roles and responsibilities of the ministry, school boards, district and school-based personnel, parents and students in the development and implementation of special education services. C. Developing an Individual Education Plan: describes the process of identifying students who have special needs, planning and implementing individual programs for them, and evaluating and reporting on their progress. D. Special Considerations - Services: describes the generic services that should be available in school districts to support service delivery. E. Special Needs Categories: defines the various kinds of students who have special needs and the essential elements that

should be included in programs for them and the criteria that must be met for supplemental funding. F. Provincial Resource Programs: describes what these programs are and lists those currently designated across the province. G. Quick Reference – Internet Resources: provides a quick reference for online information websites. H. Appendices: includes information about facilities planning; access to equipment, technology and services; resolution of conflicts; classification of psychological tests; distributed learning; full-day K; graduation requirements; in-school nursing support services; use of student records; transition planning; transportation and work experience.

To ensure common interpretation, the definitions of terms used in this manual are being placed at the front of the document. 1. 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 subject or course and to demonstrate mastery of concepts. Essentially, adaptations are "best practice" in teaching. A student working on learning outcomes of any grade or course level may be supported through use of adaptations. Adaptations do not represent unfair advantages to students. In fact, the opposite could be true. If appropriate adaptations are not used, students could be unfairly penalized for having learning differences, creating serious negative impacts to their achievement and self-concept. 2. Assessment is a systematic process of gathering information in order to make appropriate educational decisions for a student. It is a collaborative and progressive process designed to identify the student's strengths and needs, set goals, and results in the identification and implementation of selected educational strategies. 3. Collaborative consultation is a process in which people work together to solve a common problem or address a common concern. A successful collaborative process is characterized by the following features: it is voluntary; there is mutual trust and open communication among the people involved; identification/clarification of the problem to be addressed is a shared task; the goal is shared by all participants; each participant's contribution is valued equally; all participants' skills are employed in identifying and selecting problem-solving strategies; and there is shared responsibility for the program or strategy initiated.

- **Objectives**

Special Education Policy All students should have equitable access to learning, opportunities for achievement, and the pursuit of excellence in all aspects of their educational programs.

"Student with special needs:" A student who has a disability of an intellectual, physical, sensory, emotional or behavioural nature, has a learning disability or has special gifts or talents, as defined in the Manual of Policies, Procedures, and Guidelines,

- **Definitions**

A school board must ensure that an Individual Education Plan (IEP) is designed for a student with special needs as soon as practical after the board identifies the student as having special needs. The only instances in which an IEP is not required are when: • the student with special needs requires little or no adaptations to materials, instruction or assessment methods; or • the expected learning outcomes have not been modified; or • the student requires 25 or fewer hours of remedial instruction by someone other than the classroom teacher, in a school year. A school board must ensure that the IEP is reviewed at least once each school year, and where necessary, is revised or cancelled. A school board must offer the parent of the student, and where appropriate, the student the opportunity to be consulted about the preparation of the IEP. The School requires a parent of a student to consult with the student's teacher or a school principal about the student's educational program, when requested to do so. A school board must offer each student who has special needs learning activities in accordance with the IEP designed for that student. When services are so specialized that they cannot be replicated in every school, they should be available at the district level, or else school districts should arrange to obtain them from community or other sources.

- **Summary**

Standards for all students, including students with special needs, are developed with high but appropriate expectations for student achievement. Students with special needs are expected to achieve some, most, or all provincial curriculum outcomes with special support. Where a student with special needs is expected to achieve or surpass the learning outcomes, performance scales, letter grades and regular reporting procedures will be used to indicate progress. Where it is determined that a student with special needs is not capable of achieving the learning outcomes of provincial or Board/Authority Authorized curriculum, and substantial course or

program modification is necessary, specific individual goals and objectives will be established for the student in his or her IEP. Performance scales, letter grades, and structured written comments may

To define and explain concept of Mental Retardation and appreciate historical evolution of meaning of Mental Retardation, in order to interpret its current meaning to Parents, CoLateral Teaching Staff, Support Staff working or assisting in home or school. 2. To describe features of Mental Retardation in Educational, Psychological and Medical context. 3. To explain causes of Mental Retardation and help Families and Community members work towards its prevention in future incidence of occurrence. 4. To administer screening material in community for early identification of Persons with Mental Retardation in Camps and Community. 5. To administer assessment tools (Teacher based Indian Tools) to determine Functional potential of student with all degree of Mental Retardation in school age. 6. To understand process of relating Functional Assessment data with planning Individualized Educational Plans in context of Mental Retardation in school age. 7. To understand and appreciate appropriate use of teaching strategies for teaching students with Mental Retardation in Inclusive Education settings.

Mental Retardation is a life - long condition, which cannot be cured. Persons with Mental Retardation possess the ability to be trained to become independent with systematic and planned support. Mental Retardation is not Mental illness. Mental illness can be cured. Persons with Mental Illness have normal development but suffer from psychological disturbance which needs systematic treatment, sometimes even medication whereas Mental Retardation is a condition when child's mental development is not matching with his physical development. For example – if a child is 8 years by age will show behaviour younger to the age like a 3 year old would behave. There are many superstitions about Mental Retardation, regarding what causes and these are common to other disabilities also. These beliefs are not based on facts include: a. Mental Retardation is due to "karma" or fate. A disabled person born in a family is considered to be a curse on the family or due to black magic. b. Mental Retardation is caused by solar eclipse. c. Some believe that a person with Mental Retardation is an "Avtaar" Major features of Mental Retardation are characterized by delay in overall development and so they need systematic training for learning activities of daily living and other essential adaptive skills. For this they need specific support to be trained at different levels corresponding to their degrees of Mental Retardation as it affects the overall development of the child, such as delay in acquiring language, social and self care skills. Ability to understand and comprehend are less or delayed, responses are slow and may have associated problems in hearing or vision. Some may have reported

history of seizures or fits that require continuous or long-term medication. Best form of management for these children is systematic and regular monitoring of training support for becoming self – reliant towards appropriate rehabilitation.

- **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

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Points for Clarification

Block 4: Curriculum Adaptations

Unit 1: Need for Curricular Adaptation, Accommodation and Modification

- **Introduction**

- **Objectives**

- **Definitions**

- **Summary**

- **Revision**

- **Assignment/Activity**

- **Points For Discussion And Clarification**

- **Introduction**

Education is a powerful instrument of social change, and often initiates upward movement in the social structure. Thereby, helping to bridge the gap between the different sections of society. The educational scene in the country has undergone major change over the years, resulting in better provision of education and better educational practices. In 1944, the Central Advisory Board of Education (CABE) published a comprehensive report called the Sergeant Report on the post-war educational development of the country. As per the report, provisions for the education of the handicapped2 , were to form an essential part of the national system of education, which was to be administered by the Education Department. According to this report, handicapped children were to be sent to special schools only when the nature and extent of their defects made this necessary. The Kothari Commission (1964–66), the first education commission of independent India, observed: "the education of the handicapped children should be an inseparable part of the education system." The comission recommended experimentation with integrated programmes in order to bring as many children as possible into these

programmes (Alur, 2002). The government's agenda to universalise elementary education, and its commitment to the Directive Principles of the Constitution, are guided by the recognition that a new universal system of education should be based on equity, the redressal of past imbalances, and the provision of access to quality education, especially for marginalised groups. Recent educational developments and the Seventy Third and Seventy Fourth Constitutional Amendments outline the possibility of entrusting basic education to the local elected bodies in towns and villages. This would allow for community participation in education at the elementary level and would introduce radical change, leading to the empowerment of learners with Special Educational Needs (SEN). Until the 1970s, the policy encouraged segregation. Most educators believed that children with physical, sensory, or intellectual disabilities were so different that they could not participate in the activities of a common school (Advani, 2002). Christian missionaries, in the 1880s, started schools for the disabled as charitable undertakings (Mehta, 1982). The first school for the blind was established in 1887. An institute for the deaf and mute, was set up in 1888. Services for the physically disabled were also initiated in the middle of the twentieth century. Individuals with mental retardation were the last to receive attention. The first school for the mentally challenged being established in 1934 (Mishra, 2000). Special education programmes in earlier times were, therefore, heavily dependent on voluntary initiative. The government's (Department of Education) initiatives after independence were manifested in the establishment of a few workshop units meant primarily for blind adults (Luthra, 1974). These units later included people who were deaf, physically impaired, and mentally retarded (Rohindekar and Usha, 1988). While some provisions existed in the States, it was considered the best course to assist and encourage voluntary organisations already working in the field (see the First Five Year Plan, 1951–1956 on http: www.planning commission.hic.in/plans/planrel/five Yr/7th/vol2/7v2ch10.html). The welfare approach continued in government programmes. Support was provided to voluntary organisations for the establishment of model schools for the blind, the deaf, and the mentally retarded. The government set up the National Library for the Blind, the Central Braille Press, and employment exchanges for the disabled. It also made provisions for scholarships, for prevention and early identification of disabling conditions, for the development of functional skills, and for aids and appliances for the disabled.

- **Objectives**

In India a learner with SEN is defined variously in different documents. For example, a child with SEN in a District Primary Education Programme (DPEP) document is defined as a child with disability, namely, visual, hearing, locomotor, and intellectual (DPEP, 2001). However, the country report in the NCERTUNESCO regional workshop report titled Assessment of needs for

Inclusive Education: Report of the First Regional Workshop for SAARC Countries (2000) states that SEN goes beyond physical disability. It also refers to, … the large proportion of children—in the school age—belonging to the groups of child labour are, street children, victims of natural catastrophes and social conflicts, and those in extreme social and economic deprivation. These children constitute the bulk of dropouts from the school system (pg.58). The SSA Framework for Implementation covers children with Special Needs (SN) under the section on Special Focus Groups. While separating children with disabilities from other groups like girls, Scheduled Castes (SC), Scheduled Tribes (ST), and urban deprived children, it makes provisions for these children under the section on SEN. The Department of Education of Groups with SN in the NCERT itself, initiates programmes for meeting the learning needs of the disabled and the socially disadvantaged and marginalised, such as the SCs, STs, and minorities. According to the International Standard Classification of Education (ISCED-97) (UNESCO, 1997), the term Special Needs Education (SNE) means educational intervention and support designed to address SEN. The term "SNE" has come into use as a replacement for the term "Special Education". The earlier term was mainly understood to refer to the education of children with disabilities that takes place in special schools or institutions distinct from, and outside of, the institutions of the regular school and university system. In many countries today a large proportion of disabled children are in fact educated in institutions under the regular system. Moreover, the concept of children with SEN extends beyond those who may be included in handicapped categories to cover those who are failing in school, for a wide variety of reasons that are known to be likely impediments to a child's optimal progress. Whether or not this more broadly defined group of children is in need of additional support, depends on the extent to which schools need to adapt their curriculum, teaching, and organisation and/or to provide additional human or material resources so as to stimulate efficient and effective learning for these pupils. However, only in a few instances and documents, across the various States of the country, has SEN been accepted in its broad perspective. On the whole, the focus has remained on learners with specific disabilities. This view is supported by the fact that the draft Inclusive Education Scheme (MHRD, 2003), available on the website of the Ministry of Human Resources Development (MHRD), www.education.nic.in/html web/iedc_sch_draft.htm (accessed on February 15, 2001), which addresses the needs of learners with disabilities, focuses on the following categories of disability: visual disabilities (blind and low vision), speech and hearing disabilities, locomotor disabilities, and neuromusculoskeltal and neuro-developmental disorders, including cerebral palsy, autism, mental retardation, multiple disability, and learning disabilities. Keeping this reality in mind the main focus of this position paper is on learners with such disabilities.

- **Definitions**

The contemporary bio-centric model of disability regards disability as a medical or genetic condition. The implication remains that disabled persons and their families should strive for "normalisation", through medical cures and miracles. Although, biology is no longer the only lens through which disability is viewed in law and policy, it continues to play a prominent role in determining programme eligibility, entitlement to benefits, and it also influences access to rights and full social participation (Mohit, 2003). A critical analysis of the development of the charity and bio-centric models suggests that they have grown out of the "vested interests" of professionals and the elite to keep the disabled "not educable" or declare them mentally retarded (MR) children and keep them out of the mainstream school system, thus using the special schools as a "safety valve" for mainstream schools (Tomlinson, 1982). Inclusive education offers an opportunity to restructure the entire school system, with particular reference to the curriculum, pedagogy, assessment, and above all the meaning of education In the 1970s, the government launched the Centrally Sponsored Scheme of Integrated Education for Disabled Children (IEDC). The scheme aimed at providing educational opportunities to learners with disabilities in regular schools, and to facilitate their achievement and retention. The objective was to integrate children with disabilities in the general community at all levels as equal partners to prepare them for normal development and to enable them to face life with courage and confidence. A cardinal feature of the scheme was the liaison between regular and special schools to reinforce the integration process. Meanwhile, the National Council of Educational Research and Training (NCERT) joined hands with UNICEF and launched Project Integrated Education for Disabled Children (PIED) in the year 1987, to strengthen the integration of learners with disabilities into regular schools. An external evaluation of this project in 1994 showed that not only did the enrollment of learners with disabilities increase considerably, but the retention rate among disabled children was also much higher than the other children in the same blocks. In 1997 IEDC was amalgamated with other major basic education projects like the DPEP (Chadha, 2002) and the Sarva Shiksha Abhiyan (SSA) (Department of Elementary Education, 2000). The IEDC scheme provides for a wide range of incentives and interventions for the education of children with disabilities. These include preschool training, counselling for parents, allowances for books and stationery, uniforms, transport, readers and escorts, hostel facilities, and other assistive devices. The scheme provides one special teacher for every eight children with disabilities, community involvement, and a resource room in a cluster of eight to 10 schools. A number of voluntary organisations are implementing the scheme in the various States.

* **Summary**

As evident from the tables above, until 1998, integrated education was provided to 8,90,000 learners in different States till the senior secondary level (NCERT, 1998). By the year 2002, the scheme had extended to 41,875 schools, benefitting more than 1,33,000 disabled children in 27 States and four Union Territories (Department of Education, MHRD, 2003). The total number of learners with SEN enrolled in regular schools under DPEP was more than 5,60,000: this represents almost 70% of the nearly 8,10,000 learners with SEN identified under this programme (DPEP, 2003). The current enrollment ratio per 1000 disabled persons between the ages of 5–18 years in ordinary schools is higher in the rural areas (475) than it is in the urban areas (444). [National Sample Survey Organisation (NSSO), 2002]. The Office of the Chief Commissioner of Persons with Disabilities stated that not more than 4% of children with disabilities have access to education. Whatever may be the case, the enactment of legislations by the State Governments has helped in facilitating access to education for all learners with SEN by introducing various entitlements like reservations, scholarships, allowances, etc. By promulgating the equal rights of learners with SEN, these Acts have significantly impacted the educational policies both at the Central and State levels, but the effect has been marginal. About 11% of disabled persons between the ages of 5–18 years were enrolled in special schools in the Despite the efforts of governmental and nongovernmental organisations (NGOs), there is still a significant need to facilitate access of disabled children to educational institutions and to education in general. The first and foremost strategy for any country, and especially India, must be therefore to increase the access to education for learners with SEN. Though awareness is being created by the inclusion of learners with SEN in major educational programmes like the DPEP and now the SSA, most of them address SEN as a segregated issue rather than as one that runs through all initiatives. This is supported by the fact that under the SSA, training, linkages with parents, salaries of special educators, aids and appliances, etc. are all provided through the separate provision of Rs 1200 per disabled child per annum. The total money available for such services thus depends on the number of disabled children identified. In addition, access to curriculum and physical access to the school are also issues that need to be addressed immediately. Figure 1 depicts some of the popular models of Integrated Education being practised in India

- **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

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Points for Clarification

Unit 2: Adaptation, Accommodation and Modification for Pre –academic Curriculum

- **Introduction**
- **Objectives**
- **Definitions**
- **Summary**
- **Revision**
- **Assignment/Activity**
- **Points For Discussion And Clarification**

- **Introduction**

Instructional accommodations and adaptations may be the most important area that the inclusion teacher will address. Because students with disabilities may not perform at the same levels of other students in the classroom, the general education teacher needs to be prepared to make accommodations and adaptations to his or her lesson plans so that each student has an opportunity to learn the material.

Some of the major issues that general education teachers may have with creating instructional accommodations and adaptations in the classroom may include the need for a starting point with examples of **how to modify**

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lesson plans for students with special needs in addition to looking at what **different types of adaptations** there are. Even though most pre-service teachers are taught to create lesson plans for the general education setting, it is also necessary for these teachers to be aware of how to modify lesson plans for students with individual needs. All children do not learn the same way, therefore general education teachers need to be aware of methods they can use to alter lesson plans to benefit students with special needs. Being aware of different types of accommodations and adaptations is another important part of being a general education teacher, as these specific areas of adaptations will help teachers focus on what exactly they can change in their lesson plans to meet the specific needs of learners.

- **Objectives**

Adaptations, accommodations, and modifications may seem like interchangeable terms, but when it comes to inclusion they carry significantly different meanings. Accommodations and modifications serve as two separate kinds of curricular adaptations. The Individuals with Disabilities Education Act (IDEA) does not specifically define accommodations and modifications, a general understanding of these terms exists.

Before delving into the differences between accommodations and modifications, let's take a step back and focus on the concept of curricular adaptations. The California Positive Behavior Initiative Positive Environments, Networks of Trainers (PENT) defines curricular adaptations as "changes permissible in educational environments which allow the student equal opportunity to obtain access, results, benefits, and levels of achievement." Simply put, curricular adaptations allow students with disabilities to participate in inclusive environments by compensating for learners' weaknesses.

- **Definitions**

Accommodations accomplish this objective without modifying the curriculum. As PENT explains, "Some curricular adaptations do not fundamentally alter or lower standards or expectations in either the instructional or assessment phases of a course of study and can be designated as 'accommodations'." In other words, students receiving

accommodations read the same material and take the same tests as their peers without disabilities.

- **Summary**

Once the IEP team successfully identifies the proper curricular adaptations for a student, the challenge becomes implementing them into the classroom. While many general education teachers view this process with trepidation, they aren't alone in figuring out how to make these adaptations serve their students well. Special education teachers are there to help, and when general education teachers establish strong working relationships with them, the odds of student success increase.

For example, general education teachers can work with special education professionals to "front-load" a topic that may be difficult for students with disabilities; the special education teacher can pull aside the children who are likely to struggle and go over this topic with them before they encounter it in the general classroom. Once they've received this accommodation, these children are much more likely to grasp the concept at hand when it's covered again in a general education setting.

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The decision to use modifications should be based on the same principle as adaptations—that all students must have equitable access to learning, opportunities for achievement, and the pursuit of excellence in all aspects of their educational programs. Before modifying the outcomes for a student, schools should review all instructional interventions tried and consider assessment information, utilizing a process that is ongoing and consultative—similar to IEP development practices overall. Modifications should be considered for those students whose special needs are such that they are unable to access the curriculum (i.e., students with limited awareness of their surroundings, students with fragile mental/physical health, students medically and cognitively/multiply challenged.) Using the strategy of modifications for students not identified as special needs should be a rare practice. In many cases, modifications need only form part of an educational program for a student with special needs, and they need not be a permanent or long term solution. Whether to use modifications should be reviewed on a regular basis. Decisions about modifications should be subject or course specific wherever possible. For example, a student with an intellectual disability may require modifications to a specific subject area such as mathematics; however, modifications may not be required to meet the provincial outcomes in physical education.

- **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

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Points for Clarification

Unit 3: Adaptation, Accommodation and Modification for Academics Curriculum

- **Introduction**

- **Objectives**

- **Definitions**

- **Summary**

- **Revision**

- **Assignment/Activity**

- **Points For Discussion And Clarification**

- **Introduction**

There is no recipe for adapting general education curriculum to meet each student's needs. Each teacher, each student, each classroom is unique and adaptations are specific to each situation. Keep in mind that curriculum does not always need to be modified. By providing multi-level instruction you will find that adapting a lesson may not always be necessary. Differentiating instruction and providing multiple ways assess allows more flexibility for students to meet the standards and requirements of the class. At other times, the curriculum can be made more accessible through accommodations. In addition, supports for one student may not necessarily be the same in all situations, e.g., a student who needs full time support from a paraprofessional for math may only need natural supports from peers for

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English, and no support for art. And, supports should not be determined by the disability label, instead supports should be used when the instructional or social activity warrants the need for assistance. (Fisher and Frey, 2001). The forms and examples on the following pages provide information about curriculum and types of adaptations that could be considered in developing the appropriate strategy for a particular student. Examples are provided for both elementary and secondary levels.

Curriculum modifications can be put into practice for different purposes ranging from altered content knowledge, conceptual difficulty, educational goals, to instructional methods and assessment. Nevertheless, curriculum modification still remains an ambiguous concept especially in relation to the concept of special needs learners, special educators, and to some extent curriculum implementers. This paper will endeavour to discuss the concept of curriculum modifications in order to understand its nature and potentials. It will also analyze some categorizations of curriculum modifications as suggested by King-Sears (2001), which include, accommodation, adaptation, parallel curriculum outcomes, overlapping curricula on a continuum and to see to what extent these modifications can be applied efficiently and effectively to meet the needs of special needs learners in Botswana. The paper will hence make some recommendations regarding the best curriculum modification(s) that can be used by special educators to harness the potentials of special needs learners. Changes in the curriculum mandate changes in assessments based on the curriculum. This paper will therefore also discuss the accompanying changes in assessment to enhance a quality education for learners with special needs.

- **Objectives**

There is no one accepted definition of curriculum modifications as researchers are still grappling with the exact meaning of the concept. Nevertheless, there are some definitions which tend to shed some light into the concept. Curriculum modification involves change to a range of educational components in a curriculum, such as content knowledge, the method of instruction, and student's learning outcomes, through the alteration of materials and programs (Comfort, 1990; King-Sears, 2001; MacMackin & Elaine, 1997; Reisberg, 1990). Koga & Hall (2004) define curriculum modification as modified contents, instructions, and/or learning outcomes for diverse student needs. In other words, curriculum modification is not limited to instructional modification or content modification but includes a continuum of a wide range of modified educational components. However, the way that we interpret curriculum influences our understanding of curriculum modification. Reisburg (1990) lists examples of the modifications of content, such

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as teaching learning strategies, simplifying concepts or reading levels, teaching different sets of knowledge and skills needed by students, and setting up specific objectives and examples of modifications to instructional methods, including reducing distractions, altering the pace of lessons, presenting smaller amounts of work, clarifying directions, and changing input and response modes. To this end, all of these teaching events should be considered as examples of curriculum modification.

- **Definitions**

Best practice in teaching suggests that a record of successful adaptations for any student should be kept within a student's file to both document current practice and support future instructional needs. In the case of a student with special needs who has an Individual Educational Plan (IEP) or English as a Second Language students who have Annual Instructional Plans, successful adaptations are recorded in these plans to document how the student is being supported currently and also so other teachers will know what works well for that student.

- **Summary**

Grading for students who have been provided with adaptations should be in relation to the outcomes of the curriculum. If the learning outcomes that a student is working toward are from the curriculum of a grade level lower than the current grade placement, this should be indicated in the IEP or learning plan and in the body of the student's progress report his section may not apply to students in ESL programs unless they are also identified as a student with special needs as determined by Ministry and district processes. Accommodations in the form of modifications are instructional and assessment-related decisions made to accommodate a student's educational needs that consist of individualized learning goals and outcomes which are different than learning outcomes of a course or subject. The decision to use modifications should be based on the same principle as adaptations—that all students must have equitable access to learning, opportunities for achievement, and the pursuit of excellence in all aspects of their educational programs. Before modifying the outcomes for a student, schools should review all instructional interventions tried and consider assessment information, utilizing a process that is ongoing and consultative—similar to IEP development practices overall. Modifications should be considered for those students whose special needs are such that they are unable to access the curriculum (i.e., students with

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limited awareness of their surroundings, students with fragile mental/physical health, students medically and cognitively/multiply challenged.) Using the strategy of modifications for students not identified as special needs should be a rare practice. In many cases, modifications need only form part of an educational program for a student with special needs, and they need not be a permanent or long term solution. Whether to use modifications should be reviewed on a regular basis. Decisions about modifications should be subject or course specific wherever possible. For example, a student with an intellectual disability may require modifications to a specific subject area such as mathematics; however, modifications may not be required to meet the provincial outcomes in physical education. .

- **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

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Points for Clarification

Unit 4: Adaptation, Accommodation and Modification for Co-Curriculum

- **Introduction**

- **Objectives**

- **Definitions**

- **Summary**

- **Revision**

- **Assignment/Activity**

- **Points For Discussion And Clarification**

- References / Further Readings

- **Introduction**

Modifying existing general curriculum has been an effective way to create more accessible learning environments to support all students and their teachers in various educational contexts. There are many terms in use regarding changes made to curriculum, such as enhancements, accommodations, overlapping, and adaptations. We differentiate *curriculummodification* from *curriculum enhancement* for the purposes of this paper. In this way, we can clarify the definition and nature of curriculum modification to emphasize its effectiveness in improving education for all children, and to provide vivid examples and useful resources which will enrich actual classroom practices for diverse learners. Although both ideas, *enhancement* and *modification*, become pivotal when we consider improving accessibilities of general curricula in relation to individual students' needs, the approach, design, and methods that result from each idea may differ significantly.

Curriculum *enhancement* is most likely to be built around existing general curriculum and to involve teachers' alterations of curriculum. Frequently, teachers will enhance curriculum with additions of instructional strategies. Frequently enhancements are created to evaluate and teach adequate background knowledge in preparation for a new task. Additionally, teachers may incorporate a variety of instructional materials and procedures to meet students' needs, including the use of co-teaching and/or instructional collaboration.

Curriculum *modification* differs from curriculum enhancement in that modification is a more extreme alteration to the curriculum than that of an enhancement. Modifications involve combinations of altered content, conceptual difficulty, educational goals, and instructional method versus building scaffolding and bridges between existing curriculum and people involved in the educational process. Such differentiation between curriculum modification and curriculum enhancement is based on ranging degrees in which our educational approach becomes distinct from or maintains the similarities to existing general curriculum. In other words, educational practices in which student and teacher interactions differ from those designed in existing general curriculum are present to a greater extent when curriculum is *modified* than when enhanced.

There are numerous ways curriculum modifications are put into practice for different purposes and outcomes on various levels (such as individual, classroom, and school-wide). Due to a flexible nature and countless applications, curriculum modification often remains an ambiguous concept and is understood as an umbrella term to include multifarious aspects of everyday teaching practices. We have refined our definition of curriculum modification based on understandings of its nature and potentialities. The discussion below introduces a way to understand the concept and some concrete practices of curriculum modification through to presenting how we have defined curriculum modification, how components can be categorized, what research says about its effectiveness, and how such empirical evidence can be applied to general education settings. We provide, in the final section, a list of useful web resources and related literature for the reader.

- **Objectives**

As noted above, the components of curriculum modification are well categorized by King-Sears (2001) into four types: (a) accommodation, (b) adaptation, (c) parallel curriculum outcomes, and (d) overlapping curricula. Switlick (1997) explains that the purpose of modifying curriculum is "to enable an individual to compensate for intellectual, physical, or behavioral challenges" and to create learning environments

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Summative evaluation will enable you to make decisions regarding specific services and the future direction of the program that cannot be made during the middle of a program cycle. Summative evaluations should be provided to funders and constituents with an interest in the program.

COMMON TYPES OF SUMMATIVE EVALUATION

- Goal-based evaluation determines if the intended goals of a program were achieved. Has my program accomplished its goals?
- Outcome evaluation investigate whether the program caused demonstrable effects on specifically defined target outcomes. What effect does program participation have on students?
- Impact evaluation is broader and assesses the overall or net effects — intended or unintended — of the program. What impact does this program have on the larger organization (e.g., high school or college), community, or system?
- Cost-effectiveness and cost-benefit analysis address questions of efficiency by standardizing outcomes in terms of their dollar costs and values. How efficient is my program with respect to cost?

- **Summary**

Types of Evaluation There are two types of school evaluation: • Self-evaluation: This is an internal process of school self-reflection, whereby the school carries out a systematic examination of the outcomes of its own agreed courses of action. The school may use an external adviser to assist the selfevaluation. This person may be the schoolís existing facilitator, or a critical friend (i.e. an outside person chosen by the school, or a teacher not involved in the particular issue being self-evaluated). Such a person may bring objectivity to the exercise. The focus of these guidelines is on self-evaluation. • External Evaluation: This is an evaluation carried out by an external body (e.g. Dept. of Education & Science, the schoolís trustees in relation to issues such as Religious Formation, Finance, and Plant Management). The School Development Plan can be a valuable resource in this context as it can give the school the confidence to participate in such external evaluations.

Why Evaluate? Evaluation on a broad level is helpful in examining the influence of courses of action on: ♦ Core issues such as mission, vision, and school aims ♦ Learning and teaching ♦ Perceived changes in the climate or environment facing the

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school ♦ Planning structures e.g. task groups, steering group etc. Specifically self-evaluation enables the school to: ♦ Measure the progress of implementation of courses of action ♦ Examine the impact of these on: ! The whole school ! The classroom ! The individual student and teacher ♦ Identify areas of success, or areas which require adjustment for future success ♦ Establish ongoing effective planning ♦ Write the Annual Report. Apart from being a requirement of some trustees groups in voluntary secondary schools, this is now a requirement under S.20 of the Education Act 1998. II. School Self-Evaluation Preliminary Steps in Self-evaluation The engagement of the stakeholders in the school planning process, where appropriate to an issue, is important. Stakeholders are also known as the school partners. They comprise: ♦ Patrons ñ Owners, and Trustees ♦ Board of Management ñ Appointed by the patron after nomination by the owners, parents, & teachers as appropriate ♦ Staff ñ Teachers and Support Staff ♦ Parents ñ Parentsí Association and general parent body ♦ Students ñ Studentsí Council and general student body ♦ Local Community ñ Supporters of and participants in the education services of the school. In advance of undertaking self-evaluation successfully the school may address the following through the appropriate partners. Ideally this occurs during the design stage of SDP: ♦ Philosophy: Set of beliefs among the partners about the intrinsic value of selfevaluation ♦ Procedures: Means of successfully putting philosophy into action ♦ Criteria: Statements of desired outcomes used as the basis for measuring success ♦ Evidence: Information collected to indicate level of success based on criteria Diagram 1 can be used as a guide to the steps to be considered at this point.

Criteria and Evidence in Self-evaluation Success criteria are statements of how things should be that are used as a measure of success in either the ongoing monitoring of action during implementation or the evaluation of outcomes of a course of action after implementation. Success can be measurable through factual data or through perceptions relating to the issue in question. As stated earlier, success criteria establish the link between information as to how things should be and information as to how things are. The criteria are used to express the ideal, the desired outcome. They focus the gathering of evidence in order to identify the actual reality. The criteria allow the school to judge how well it is achieving its stated intention. Criteria are sometimes known as indicators. It is important that schools, when identifying success criteria, focus on the heart of the matter at hand, namely the impact of the course of action on the students and teachers in the school. The priorities, targets and tasks of any action plan ideally inform the headings under which success criteria are developed for the school. The following example provides a guide as to how success criteria may be developed for a school subject.

which "allow the individual to use existing skill repertoires while promoting the acquisition of new skills and knowledge" (p. 236). We need to understand that these are the purposes which underlie the four types of curriculum modification identified by King-Sears.

In the following section, brief explanations of each type of curriculum modification with examples from actual classrooms are presented. Actual educational practices reflecting modified curriculum vary in many ways,as modification occurs in various educational settings across diverse subject areas, students, assignments, assessments, evaluations, and so on. Presenting examples for *all* educational situations is beyond the scope of this paper. Therefore, we selected a range of examples across four types of curriculum modification with a special focus on the examples from integrated general classrooms. For instance, the section regarding accommodation involves an example of using assistive technology in writing class for students with learning disabilities and an example of using audio books for English Language Learners in a reading lesson. Likewise, various settings (math, language arts, social studies, and science) and learners (students with moderate to severe disabilities as well as students identified as gifted and talented) appear in the examples presented across the four types of curriculum modification.

Following the description and examples of each curriculum modification type is a table illustrating comparisons among four types of curriculum modification in relation to components modified and the extent to which modified curricula differ from the general curriculum. The table helps us visually recognize that, as we move forward from accommodation to overlapping curricula, focused components shift from instruction-oriented to content-oriented and that educational practices reflecting modified curriculum become more distant from educational practices based on general curriculum.

- **Definitions**

It is important to note that no single definition of curriculum modification exists. Many researchers offer many definitions from various fields of discipline. In other words, the practice of curriculum modification has been discussed in different languages by many researchers from various specialty areas in education. For instance, in addition to the most frequently used terms, *accommodation* and *adaptation*, some use terms such as *alteration*, *differentiation*, *change*, *revision*, *enhancement*, *compacting*, *integration*, and *scaffolding* to discuss teaching events involving curriculum modification. Another issue is that discussions regarding curriculum modification are often interwoven with ideas of strategy use for

intended educational purposes. This creates a situation in which we face the difficulty of separating literature focusing on teaching strategies from those focusing on curriculum modification.

Our challenge is to clarify these ambiguities and to refine the definition of curriculum modification. In this review, we define *curriculum modification* as *modified content, instruction, and/or learning outcomes to meet diverse student needs*. In other words, curriculum modification is not limited to instructional modification or content modification but includes a continuum of a wide range of modified educational components. Similarly, Comfort (1990) defines curriculum modification as "the adapting or interpreting of a school's formal curriculum by teachers into learning objectives and units of learning activities judged most reasonable for an individual learner or particular group of learners" (p. 397). Curriculum modification involves change to a range of educational components in a curriculum such as content knowledge, the method of instruction, and students' learning outcomes, through the alteration of materials and programs (Comfort, 1990; King-Sears, 2001; MacMackin & Elaine, 1997; Reisberg, 1990).

Although some may distinguish instruction from curriculum and argue that mere instructional modification should not be considered as curriculum modification, defining curriculum modification requires us to understand curriculum as a broad concept which involves various educational components and people involved in educational processes. After all, content, instruction, input and output inseparably construct daily teaching and learning. We also conceive school curriculum as a framework for guiding teachers (Comfort, 1990). In short, the way that we interpret curriculum influences our understanding of curriculum modification. Reisburg (1990) lists examples of *the modifications of content*, such as teaching learning strategies, simplifying concepts or reading levels, teaching different sets of knowledge and skills needed by students, and setting up specific objectives and examples of *modifications to instructional methods* including reducing distractions, altering the pace of lessons, presenting smaller amounts of work, clarifying directions, and changing input and response modes. All of these teaching events should be considered as examples of *curriculum modification*.

For the purpose of this report, we have adopted the categorization of curriculum modification suggested by King-Sears (2001). King-Sears identified four types of curriculum modification: (a) accommodation, (b) adaptation, (c) parallel curriculum outcomes, and (d) overlapping curricula on a continuum. This categorization represents the relation between modified curriculum and general curriculum in terms of differences and similarities in educational input including content knowledge and conceptual difficulty, educational output including educational goals, and methods of instruction. The extent to which a modified curriculum differs from the general curriculum becomes greater as educational practice moves

from accommodation to overlapping curricula. For instance, in accommodation, the only educational components which may differ from general curriculum are instructional method and educational goals, whereas, in overlapping curricula, all components—input, output, and instructional methods that students receive—can be totally different from those designed in general curriculum.

As conceptualized along this continuum, curriculum modification that King-Sears suggests contains a wide range of educational practices and shares the essence of the aforementioned definition of curriculum modification:*modified content, instruction, and/or learning outcomes for diverse student needs*. Modifications identified by King-Sears, for example, range from an educational practice of simply providing an audio book to some students who have reading difficulties during reading lessons to an educational practice of having some special needs students work on individual (IEP) goals, such as following directions, while they engage in general science lessons. Moreover, these four types of curriculum modification, according to King-Sears, are extensions of curriculum enhancement within the process for teachers to determine the degree of accessibility of their classroom for students with disabilities. In other words, curriculum modification, in King-Sears' view, is a suggested step to take when curriculum enhancement alone is not effective to achieve objectives for inclusion.

King-Sears' clear categorization and analysis of the components of curriculum modification is valuable for educators to capture the essence of curriculum modification. As stated above, her categorization consists of a wide range of educational practices. Since curriculum modification is practiced in numerous ways, it is important to broaden the definition rather than limiting it to particular events.

- **Summary**

Accommodation

The term *accommodation* is used to mean a modification to the delivery of instruction or method of student performance and does *not* change the content or conceptual difficulty of the curriculum (see Table 1). Both teachers and students can play a role in the changes to instructional methods in order to achieve the same intended instructional outcomes suggested in general curriculum. Examples of accommodation are countless. Some include incorporating different types of teaching devices and techniques (such as use of audio or other formats as an alternative to print), technology, graphic organizers, and pictorial representation;

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and changing the amount of input, time-frame for learning, and levels of support for individual students' needs.

Among these examples, using assistive/adaptive technologies typically exemplify an accommodation to general curriculum. Bray, Brown,and Green (2004) define assistive/adaptive technologies as "content-free technologies" (p. 34) which does not address curriculum or promote specific learning butrather helps students overcome inaccessibility due to individual differences. In an actual classroom, a student with physical disabilities may use computer input devices, such as a trackball mouse which requires less hand movement oran alternate keyboard with extra large keys, to complete his/her writing task. In this case, the content and difficulty level of tasks remain the same as the tasks in which other students in the class engage. An accommodation through the use of assistive/adaptive technologies allows students to complete their tasks required in general curriculum which would be difficult to complete otherwise.

Another example of accommodation is making audio versions of books available for students who are English Language Learners (ELLs) and students with print disabilities when they engage in reading sessions focusing on reading comprehension skills. Instead of providing the traditional written or printed form of text, teachers can have these students work individually or in a small group to read an assigned book with auditory support. Again, through this type of accommodation, students with diverse needs can acquire the same content knowledge as other students and move onto the next stage of learning with them. In the case of ELLs, students can comprehend the text with audio support and then participate in the follow-up activities with other classmates based on their understanding of what was read. Frequently, teachers regard ELL students' developing language proficiency as a disadvantage which causes a necessary lag-behind (Valdes, 2002). As a result, teachers may provide curriculum modification with more content-focused alteration, which simplifies the content, may change the standards and goals, does not provide enough cognitive challenge and academic stimulus, and does not help students' acquisition of the English language. Although it is important to understand that acquiring a second language, especially academic language, is not a quick fix and takes many years of instruction (Cummins, 2000), teachers also need to know that ELLs, like other general students, should receive an appropriate cognitive challenge with appropriate conceptual difficulties and a sense of belonging to their class regardless of their developing language proficiencies(Igoa, 1995). When used with students with appropriate language proficiency levels, an accommodation to general curriculum can be a powerful tool to support ELL students' unique linguistic, academic, and social needs.

Switlick (1997) has listed other examples of accommodations, such as requiring completion of every other word problem on a math worksheet or providing for oral

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performance instead of written. As we see in these examples, accommodation is not a change of educational input designed in general curriculum, such as content knowledge and the conceptual difficulty of the subjects. Rather, accommodation is a modification of instructional methods intended to meet individual student's needs of acquiring necessary input from lessons. The information that students receive remains the same. However, an accommodation to curriculum modifies the way that students acquire and/or respond to the information.

Another important point to add is that the intended goals of accommodated curriculum may change from those of general curriculum depending on educational contexts. For instance, using an audio book in a reading comprehension lesson creates an opportunity for students to use their listening skills in addition to reading or decoding skills. If the students were English-speaking children with reading difficulty who had already established English listening skills, the intended goals of curriculum would remain the same as those in general curriculum. However, if the students were ELLs who were still in the process of developing their listening skills, teachers could indicate an additional goal for them (which is the development of listening skills). Thus, accommodation has a flexibility of adjusting intended educational goals based on context.

Adaptation

Adaptation is a modification to the delivery of instructional methods and intended goals of student performance that does not change the content but does *slightly change* the conceptual difficulty of the curriculum (see Table 1). Adaptations usually require more teacher effort and time than simply changing instructional methods or access as in an accommodation. An adaptation is a goal-driven process: in order to decide on an adaptation to curriculum, teachers first need to specify intended goals for individual students. Again, examples of adaptation abound, and include providing differentiated activities, homework, and evaluations, and using adapted or different instructional materials and activities for individual students.

Adaptations in integrated general classrooms often occur when teachers differentiate instruction. For instance, teachers can create writing lessons that meet individual students' unique needs by having students work on adapted assignments. While some students are engaging in a writing assignment individually, students with learning disabilities may work on their assignment in a small group with teacher support. The teachers may also modify the content of the writing activity depending on students' needs. While the teacher requires some students to compose using the five new vocabulary words from the lesson, the students with a learning disability may select three of the five new words from the lesson and make appropriate use of them in the context of their work. King-Sears (2001) suggests that a variation of this type of lesson can be providing students with disabilities fewer practice tasks. She also points out that reducing the amount of tasks seen in

an accommodated instruction should be differentiated from that provided in adapted instruction. On the one hand, the *accommodated* instruction may modify the amount of tasks (for instance, teachers provide only five math problems to students with math difficulties while others work on ten problems) without changing the conceptual difficulty of the tasks. On the other hand, *adapted* instruction involves a slight change in conceptual difficulty to meet students' needs.

- **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

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Points for Clarification

- References / Further Readings

Birnbaum, B. W. (2001). Using computers to modify the curriculum for students with learning disabilities. Learning Disabilities: A Multidisciplinary Journal, 11(1), 19-25.

Birnbaum provides practical ways to modify curriculum using technology. The author identifies five areas to consider when teachers incorporate technology into curriculum for students with learning disabilities: (a) criteria for the selection of software, (b) using computer games, (c) the Internet as a tool for teaching across the curriculum, (d) using multimedia, and (e) using hypermedia. A list of web sites useful across subjects is provided for teachers.

Bray, M., Brown, A., & Green, T. D. (2004). Technology and the diverse learner: A guide to classroom practice. Thousand Oaks, CA: Corwin Press, Inc. ∂

This book is designed for those who are teaching diverse learners and who want to incorporate technology into instruction. The diverse students on whom this text is focused include female and male students, students with different cultural backgrounds, English second language learners, students with disabilities, and gifted and talented students. The authors provide practical ideas of technology solutions for each group of diverse students as well as overviews of each group's characteristics. The appendices at the end of this book include useful resources of which particular technology and instructional strategies are suitable for a particular group of students.

Buxton, C. (1999). Designing a model-based methodology for science instruction: Lessons from a bilingual classroom. Bilingual Research Journal, 23(2&3), 113-143.

The authors of this article present empirical findings from a three-year longitudinal science project, the Science Theatre Project, in which modified science curriculum was provided to elementary aged Spanish-English bilingual children in a two-way bilingual program. The researcher reported upon the effectiveness of modified science curriculum to students' academic success. Buxton emphasized the consideration of students' cultural backgrounds in the process of modification.

Cawley, J. F. &Parmar, R. S. (1990).Issues in mathematics curriculum for handicapped students.Academic Therapy, 25(4), 507-521.

Cawley and Parmar explain the curriculum modification procedure in mathematics necessary for students with handicaps. The authors describe that curriculum modification in mathematics has to include curriculum reorganization, which focuses on the concepts relevant to a specific subject rather than simply on material and the amount of information provided. Theoretical backgrounds and examples of curriculum reorganization are presented within the framework of the National Council of Teachers of Mathematics (NCTM) standards.

Clarke, S., Dunlap, G., Foster-Johnson, L., Childs, K., Wilson, D., White, R., & Vera, A. (1995). Improving the conduct of students with behavioral disorders by incorporating student interests into curricular activities. Behavioral Disorders, 20(4), 221-237.

In this empirical study the authors suggest that curriculum modified with students' personal interests was effective in improving their behavior management and increased their task productivity. Functional analysis and functional assessment were used to determine students' interests. Qualitative data obtained via a questionnaire demonstrated that students preferred the modified curriculum to the conventional curriculum.

Comfort, R. (1990).On the idea of curriculum modification by teachers.Academic Therapy, 25(4), 397-405.

Comfort presents a theoretical perspective of curriculum as a teacher-directed modification process and provides suggestions for teachers in terms of their professional responsibilities. Comfort also provides four elements conducive to fostering curriculum modification: (a) a school system curriculum of appropriate breadth and specificity, (b) curriculum development and implementation processes that include an integral role for teachers, (c) expectations for greater collaborative relationships, and (d) provision of orientations to and encouragement of the practice of curriculum modification.

Cosier, M., Causton-Theoharis, J., &Theoharis, G. (2013). Does access matter? Time in general education and achievement for students with disabilities. Remeidal and Special Education, 34(6), 323-332.

Cummins, J. (2000). Language proficiency in academic contexts: Language, Power, and Pedagogy: Bilingual Children in the Crossfire (pp. 57-85). Toronto, Canada: Multilingual Matters LTD.

Cummins provides a rationale for the distinction between the acquisition of conversational language and that of academic language from

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multidisciplinary points of view in the chapter cited. The author describes the distinction using the framework in which students' language proficiency is categorized by the fundamental dimensions of contextual support and cognitive demand. This framework highlights the way in which educational interventions for ELL students relate to various factors, such as students' language and culture, societal power structure, instruction, and assessment.

Dunlap, G., Foster-Johnson, L., Clarke, S., Kern, L., & Childs, K. (1995). Modifying activities to produce functional outcomes: Effects on the problem behaviors of students with disabilities. Journal of the Association for Persons with Severe Handicaps, 20(4), 248-258.

Dunlap, et al., in this empirical study suggest that modified curriculum was effective in reducing students' disruptive behaviors and increasing their task productivity and completion. Curriculum was modified with students' personal interests determined through a functional assessment.

Dunlap, G., Kern-Dunlap, L., Clarke, S., & Robbins, F. R. (1991).Functional assessment, curricular revision, and severe behavior problems.Journal of Applied Behavior Analysis, 24, 287-397.

In this case study, functional assessment was used to determine students' behaviors, preferred physical movement, and choices and curriculum was modified according to the findings of the assessment. Dunlap, et al., report findings that functional assessment processes and curriculum modification were effective in reducing students' severe behavior problems.

Fradd, S. H., Lee, O., Sutman, F. X., & Saxton, M. K. (2001). Promoting science literacy with English language learners through instructional materials: A case study. Bilingual Research Journal, 25(4), 417-439.

Fradd, et al., report upon the effectiveness of curriculum modification as implemented in two large-scale science projects: the Promise Project and the Science for All Project. Curriculum modification included the incorporation of more open inquiry and the integration of language and literacy aspects into curriculum for English Language Learners. The researchers concluded that modified curriculum was effective in increasing the students' academic achievement in science.

Hehir, T., Schifter, L., Grindal, L., Ng, M., &Eidelman, H. (2014). Review of special education in the commonwealth of Massachusetts: A synthesis report. Boston, MA: Massachusetts Department of Elementary and Secondary Education.

Igoa, C. (1995). The Inner World of the Immigrant Child. New York, NY: St. Martin's Press, Inc.

This book describes immigrant children's psychosocial experiences in schools. Igoa uses qualitative research methods and provides rich narratives expressed in children's voices in order to illuminate the issues of being immigrant children in this country. As a teacher who was involved in this participatory action research, Igoa presents three major suggestions to the educators of immigrant children: (a) step-by-step teaching methodologies sensitive to immigrant children's needs and feelings, (b) specific classroom practices that contribute to children's literacy development and their self-empowerment, and (c) program designs for more personalized teaching.

Johnson, G. M. (2000). Schoolwide enrichment: Improving the education of students (at risk) at promise. Teacher Educator, 27(4), 45-61.

Johnson presents theoretical and practical aspects underlying the Schoolwide Enrichment Model (SEM). The main point of this article is that the SEM can benefit not only gifted and talented students but also students who are identified as at-risk. The process of curriculum modification techniques, as well as curriculum compacting, is explained as a part of the SEM.

Kern, L., Bambara, L., &Fogt, J. (2002). Class-wide curricular modification to improve the behavior of students with emotional or behavioral disorders.Behavioral Disorders, 27(4), 317-326.

Kern, et al., examined the effectiveness of modified curriculum for six teenage boys with behavioral challenges. Curriculum modification in this study involved more choice-making opportunities and high-interest activities. The authors reported that modified curriculum contributed to the reduction of students' disruptive behaviors and increased engagement in their academic tasks.

Kern, L., Childs, K. E., Dunlap, G., Clarke, S., & Falk, G. D. (1994). Using assessment-based curricular intervention to improve the classroom behavior of a student with emotional and behavioral challenges. Journal of Applied Behavior Analysis, 27, 7-19.

The authors of this case study reported that modified curriculum in English, math, and spelling was an effective way to increase on-task behavior of a child with severe emotional and behavioral challenges. Kern, et al., used functional assessment to examine the student's behavior and to develop

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hypotheses for modifying curriculum based on the student's unique needs. Curriculum modification in this study included change to the content, length, and mode of performance in instruction. This study contributes to the justification of incorporating a functional assessment into a curriculum modification process for children with behavioral issues.

King-Sears, M. E. (2001).Three steps for gaining access to the general education curriculum for learners with disabilities.Intervention in School and Clinic, 37(2), 67-76.

King-Sears presents a three-step process for teachers to determine the degree of accessibility of their classroom for their students with disabilities and introduces checklists, examples, and rubrics, and suggestions for strengthening and modifying the curriculum. King-Searscategorizes curriculum modification into four main topics: accommodation, adaptation, parallel curriculum, and overlapping curricula. The three-step process includes (a) analyzing the general education curriculum, (b) curriculum enhancement, and (c) curriculum modification. The author's emphases are on the importance of teacher collaboration and individually designed curriculum modification. King-Sears' view contributes to the notion that curriculum enhancement and curriculum modification can be effective for all students.

Lee, S. H., Wehmeyer, M. L., Palmer, S. B., Soukup, J. H., & Little, T. D. (2008).Self-determination and access to the general education curriculum.Journal of Special Education, 42, 91-107.

MacMackin, M. C. & Elaine, M. B. (1997). A change in focus: Teaching diverse learners within an inclusive elementary school classroom. Equity & Excellence in Education, 30(1), 32-38.

MacMackin and Elaine suggest that modifications of curriculum and those of instruction are both necessary to meet diverse needs of students in inclusive classrooms. This article provides the concepts of curriculum modification for many general education teachers who are interested in meeting the diverse needs of students but do not know how to make appropriate modifications. The authors also describe three categories of curriculum and instructional modification: (a) modifications of the context for learning, (b) modifications of instructional strategies/instructional materials, and (c) modifications of organizational and study skills.

Moon, T. R. & Callahan, C. M. (2001). Curricular modifications, family outreach, and a mentoring program: Impacts on achievement and gifted

identification in high-risk primary students. Journal for Education of the Gifted, 24(4), 305-321.

Moon and Callahan report upon the effectiveness of curriculum modification implemented as a part of Project Support to Affirm Rising Talent (START). Modified curriculum, when combined with other interventions in the project, was helpful to prevent academic failure among primary grade students from low-socioeconomic environments, especially those who were identified as at-risk.

Olenchak, F. R. (1990). School change through gifted education: Effects on elementary students' attitudes toward learning. Journal for Education of the Gifted, 14(3), 66-78.

In this empirical study by Olenchak the author shows that curriculum modification implemented through the Schoolwide Enrichment Model (SEM) had a positive impact on students' attitudes toward learning. The subjects involved a large population of middle school students. Olenchak emphasizes the effectiveness of the SEM for all students and suggests that our preconceptions of gifted education as a limited educational opportunity for only selected students need to be changed.

Olenchak, F. R. &Renzulli, J. S. (1989). The effectiveness of the schoolwide enrichment model on selected aspects of elementary school change. Gifted Child Quarterly, 33(1), 36-46.

The researchers of this empirical study illustrate that a one-year implementation of the Schoolwide Enrichment Model (SEM) was effective for a large number of elementary school students—not only gifted and talented students but also general education students—regarding their creative productivity and attitudes toward overall learning as well as the concept of gifted education. As a part of the model, curriculum compacting was used.

Reis, S. M., Westberg, K. L., Kulikowich, J. M., & Purcell, J. H. (1998). Curriculum compacting and achievement test scores: What does the research say? Gifted Child Quarterly, 42(2), 123-129.

The authors of this empirical study examined the effectiveness of curriculum compacting on the achievement test scores of gifted and talented students. Curriculum compacting was used as an enrichment and involved eliminating about half of already-learned curricula. The results reported indicate that students who received compacted curriculum performed as well as those who received regular curriculum without any elimination. The findings of this

study can help reduce teachers' fears regarding compacting curriculum for gifted and talented students.

Reisberg, L. (1990). Curriculum evaluation and modification: An effective teaching perspective. Intervention in School and Clinic, 26(2), 99-105.

Reisberg presents a format for curriculum evaluation based on the literature on effective teaching for students with disabilities, including the ideas suggested by Englert, Rieth, and Everson and Rosenshine. Reisberg's format includes six domains: (a) scope and sequence, (b) organization, (c) presentation, (d) guided practice, (e) independent practice, and (f) periodic review. Rosenshine posits that the curriculum evaluation should reflect the components of effective teaching, such as the completeness and organization of the curriculum, response requirements, and opportunities and procedures for measurement.

Salisbury, C. L., Mangino, M., Petrigala, M., Rainforth, B., Syryca, S., &Palombaro, M. M. (1994). Promoting the instructional inclusion of young children with disabilities in the primary grades. Journal of Early Intervention, 18(3), 311-322.

Salisbury describes how curriculum adaptation successfully promoted physical, social, and instructional inclusion of elementary age students with mild to severe disabilities. Curriculum adaptation involved change to the content and objectives of the curriculum used based on students' IEPs. Four suggestions for successful curriculum adaptation processes for inclusion are recommended by the author.

Shogren, K. A., Palmer, S. B., Wehmeyer, M. L., Williams-Diehm, K., & Little, T. D. (2012).Effect of intervention with the self-determined learning model of instruction on access and goal attainment. Remedial and Special Education, 33(5), 320-330.

Sparks, S. (2000). Classroom and curriculum accommodations for Native American students.Intervention in School and Clinic, 35(5), 259-263.

Unit 5

- Introduction
- Objectives
- Definitions
- Summary
- Revision
- Assignment/Activity
- Points For Discussion And Clarification

- Introduction

Adaptations, accommodations, and modifications may seem like interchangeable terms, but when it comes to inclusion they carry significantly different meanings. Accommodations and modifications serve as two separate kinds of curricular adaptations. The Individuals with Disabilities Education Act (IDEA) does not specifically define accommodations and modifications, a general understanding of these terms exists.

Before delving into the differences between accommodations and modifications, let's take a step back and focus on the concept of curricular adaptations. The California Positive Behavior Initiative Positive Environments, Networks of Trainers (PENT) defines curricular adaptations as "changes permissible in educational environments which allow the student equal opportunity to obtain access, results, benefits, and levels of achievement." Simply put, curricular adaptations allow students with disabilities to participate in inclusive environments by compensating for learners' weaknesses.

- **Objectives**

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

These same three principles should guide the differentiation of instruction, assessment methods, and/or materials--particularly the principle that people learn in a variety of ways and at different rates. Today's classrooms are diverse and inclusive by nature. Differentiation of instruction and assessment and the principles of universal design are now recognized practices for teachers. Both differentiation and universal design provide systematic approaches to setting goals, choosing or creating flexible materials and media, and assessment. To undertake differentiation and universal design, teachers need to be aware of a range of accommodations (multiple means of representation, of expression, and/or of engagement) that may be necessary to help each student in the classroom succeed. These accommodations may take the form of adaptations and/or modifications. Many students with special needs and significant learning challenges will be able to achieve the learning outcomes for subjects or courses with no or minor adaptations. Some may be able to achieve the learning outcomes of some subjects or courses with adaptations. A small proportion will need to work on individualized outcomes, goals different than the curriculum; this is referred to as modification.

- **Definitions**

Adaptations , all students should have equitable access to learning, opportunities for achievement and the pursuit of excellence in all aspects of their educational programs. 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 subject or course and to demonstrate mastery of concepts. Essentially, adaptations are "best practice" in teaching. A student working on learning outcomes of any grade or course level may be supported through use of adaptations. Adaptations do not represent unfair advantages to students. In fact, the opposite could be true. If appropriate adaptations are not used, students could be unfairly penalized for having learning differences. creating serious negative impacts to their achievement and self-concept.

Accommodations in the form of adaptations occur when teachers differentiate instruction, assessment and materials in order to create a flexible learning environment. For example, a student could be working on below grade level learning outcomes in Language Arts and at grade level in all other subjects or courses, some of which require reading materials at the lower reading level.

- **Summary**

Adaptations include, but are not limited to: • 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 to demonstrate knowledge and understanding • advance organizers/graphic organizers to assist with following classroom presentations • extended time to complete assignments or tests • support to develop and practice study skills; for example, in a learning assistance block • 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 provincial learning outcomes from a lower grade level Best practice in teaching suggests that a record of successful adaptations for any student should be kept within a student's file to both document current practice and support future instructional needs. In the case of a student with special needs who has an Individual Educational Plan (IEP) or English as a Second Language students who

have Annual Instructional Plans, successful adaptations are recorded in these plans to document how the student is being supported currently and also so other teachers will know what works well for that student.

This section may not apply to students in ESL programs unless they are also identified as a student with special needs as determined by Ministry and district processes. Accommodations in the form of modifications are instructional and assessment-related decisions made to accommodate a student's educational needs that consist of individualized learning goals and outcomes which are different than learning outcomes of a course or subject.

The decision to use modifications should be based on the same principle as adaptations—that all students must have equitable access to learning, opportunities for achievement, and the pursuit of excellence in all aspects of their educational programs. Before modifying the outcomes for a student, schools should review all instructional interventions tried and consider assessment information, utilizing a process that is ongoing and consultative—similar to IEP development practices overall. Modifications should be considered for those students whose special needs are such that they are unable to access the curriculum (i.e., students with limited awareness of their surroundings, students with fragile mental/physical health, students medically and cognitively/multiply challenged.) Using the strategy of modifications for students not identified as special needs should be a rare practice. In many cases, modifications need only form part of an educational program for a student with special needs, and they need not be a permanent or long term solution. Whether to use modifications should be reviewed on a regular basis. Decisions about modifications should be subject or course specific wherever possible. For example, a student with an intellectual disability may require modifications to a specific subject area such as mathematics; however, modifications may not be required to meet the provincial outcomes in physical education.

- **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

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Points for Clarification

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- References / Further Readings

Block5: Curriculum Evaluation

Unit 1: Concept, Meaning, Definition of Curriculum Evaluation

- **Introduction**

- **Objectives**

- **Definitions**

- **Summary**

- **Revision**

- **Assignment/Activity**

- **Points For Discussion And Clarification**

- References / Further Readings

- **Introduction**

This module offers opportunities for curriculum professionals to develop their understanding of curriculum evaluation and student assessment by exploring:

- International and regional trends and rationales for curriculum evaluation and student learning assessment;

- Types and methods of curriculum evaluation and student assessment;

- Approaches to the restructuring of evaluation and assessment systems.

This module is organized in three activities:

1. **Curriculum evaluation.** The participant is guided through an analytical schema to plan the evaluation of curricula.

2. **Student assessment.** Participants examine considerations about student assessment that are regularly included in curriculum materials.

3. **Assessment of learning outcomes in specific content areas.** Strategies and special modalities for the assessment of learning outcomes are analyzed for content areas recently included in curricula.

Following these activities is a "Resources" section which contains a list of discussion papers and other resources referred to in the activities, and a series of additional reading materials.

Conceptual framework

Curriculum evaluation is a necessary and important aspect of any national education system. It provides the basis for curriculum policy decisions, for feedback on continuous curriculum adjustments and processes of curriculum implementation.

The fundamental concerns of curriculum evaluation relate to:

- Effectiveness and efficiency of translating government education policy into educational practice;

- Status of curriculum contents and practices in the contexts of global, national and local concerns;

- The achievement of the goals and aims of educational programmes.

Student assessment is an important aspect of curriculum evaluation which helps to facilitate the understanding of the impact and outcome of education programmes. A fundamental measure of the success of any curriculum is the quality of student learning. Knowing the extent to which students have achieved the outcomes specified in the curriculum is fundamental to both improving teaching and evaluating the curriculum.

- **Objectives**

Curriculum evaluation

The term "evaluation" generally applies to the process of making a value judgment. In education, the term "evaluation" is used in reference to operations associated with curricula, programs, interventions, methods of teaching and organizational factors. Curriculum evaluation aims to examine the impact of implemented curriculum on student (learning) achievement so that the official curriculum can be revised if necessary and to review

teaching and learning processes in the classroom. Curriculum evaluation establishes:

- Specific strengths and weaknesses of a curriculum and its implementation;

- Critical information for strategic changes and policy decisions;

- Inputs needed for improved learning and teaching;

- Indicators for monitoring.

Curriculum evaluation may be an internal activity and process conducted by the various units within the education system for their own respective purposes. These units may include national Ministries of Education, regional education authorities, institutional supervision and reporting systems, departments of education, schools and communities.

Curriculum evaluation may also be external or commissioned review processes. These may be undertaken regularly by special committees or task forces on the curriculum, or they may be research-based studies on the state and effectiveness of various aspects of the curriculum and its implementation. These processes might examine, for example, the effectiveness of curriculum content, existing pedagogies and instructional approaches, teacher training and textbooks and instructional materials.

Student assessment

The ultimate goal of curriculum evaluation is to ensure that the curriculum is effective in promoting improved quality of student learning. Student

assessment therefore connotes assessment of student learning. Assessment of student learning has always been a powerful influence on how and what teachers teach and is thus an important source of feedback on the appropriateness implementation of curriculum content.

Fulfilling the diverse objectives of diagnosis, certification and accountability requires different kinds of assessment instruments and strategies selected to achieve specific purposes. Assessment of student learning could be summative or formative, and there are various types of tests to address different needs such as standardized tests, performance-based tests, ability tests, aptitude tests and intelligence tests.

- **Definitions**

This module is about policy dialogue –the process of formulating curriculum-related public policies by engaging and consulting with stakeholders. It is these policies which set the parameters for the work of curriculum developers. The module offers opportunities for curriculum professionals to develop their understanding of this process by exploring:

- National issues that commonly prompt and shape changes in the curriculum and the education system;

- The various participants or stakeholders involved in education reform and curriculum change and their respective roles and interests in policy formulation;

- Potential problems and areas of conflict that may arise from formulation and implementation of changes in the curriculum;

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- Ways of managing / dealing with conflict and resistance and mobilizing popular support for ongoing or proposed change in the curriculum;

- Examples of sensitive or challenging curriculum policy issues in particular socio-political and cultural contexts.

The six activities in this module seek to guide curriculum professionals through the stages of curriculum policy formulation:

1. **Rationales for promoting a change.** Why does curriculum change occur.

2. **Actors and context for change.** Conducting "contextual scans" of the educational system and wider environment.

3. **Design of consultation processes.** How to identify legitimate stakeholders in the curriculum and how to engage them in policy dialogue and consultations.

4. **Advocacy before educational authorities.** The way curriculum specialists can have productive conversations with government decision-makers to achieve support and leadership in the process of curriculum change.

5. **Hints for planning a consultation process.** With a view to generating as much consensus as possible among stakeholders and popular support for the substance and direction of the curriculum policies.

6. **Sensitive issues.** How countries in various parts of the world have dealt with some politically and or culturally sensitive curriculum policy issues to preserve and promote national goals and interests.

- **Summary**

Evaluation has a long history. As Guba and Lincoln (1981) pointed out, a Chinese emperor in 2200 b.c. required that his public officials demonstrate their proficiency in formal competency tests. In the United States, the concern for evaluating schools can be traced at least as far back as the recommendations of the Committee of Ten, which at the end of the 19th century set perhaps the first example of "evaluative standards" for the nation's secondary schools (National Education Association, 1969). In recent years, however, the interest in curriculum evaluation in particular has seemed to increase markedly. The public's insistence on educational accountability, the experts' demands for educational reform, and the educators' concomitant need for evidence of results have all contributed to the current interest in theories and methods of curriculum evaluation. Unfortunately, much of this interest seems to have resulted in an ill-conceived obsession with test results. A broader perspective and more diversified approaches seem necessary. This desired breadth and diversification have been reflected throughout this work. Chapter 6 described a comprehensive assessment model that can be used in improving a program of studies. Chapter 8 emphasized the importance of evaluating new courses of study. Chapter 11 described the importance of curriculum alignment. The intent of this chapter is to bring all these approaches into focus and to provide for greater understanding of the evaluation process. To that end, it begins by proposing a broad definition of the term curriculum evaluation. It then describes several evaluation models. It concludes by proposing a comprehensive and eclectic process that can be used to evaluate a field of study, which is perhaps the most difficult curricular element that evaluators face.

CURRICULUM EVALUATION DEFINED That broader perspective mentioned above requires a less constricting view of both the purposes and foci of curriculum evaluation. In reviewing the literature and acquiring a broader understanding of purpose, two concepts delineated by Guba and Lincoln (1981) seem especially

useful: merit and worth. Merit, as they use the term, refers to the intrinsic value of an entity—value that is implicit, inherent, and independent of any applications. Merit is established without reference to a context. Worth, on the other hand, is the value of an entity in reference to a particular context or a specific application. It is the "payoff" value for a given institution or group of people. Thus, a given English course may seem to have a great deal of merit in the eyes of experts: It may reflect sound theory, be built on current research, and embody content that experts deem desirable. The same course, however, may have relatively little worth for a teacher instructing unmotivated working-class youth in an urban school: It may require teaching skills that the teacher has not mastered and learning materials that the students cannot read. In this sense, then, curriculum evaluation should be concerned with assessing both merit and worth.

The foci of curriculum evaluation also need to be expanded. To use the concepts of this present work, curriculum evaluation should be concerned with assessing the value of a program of study (all the planned learning experiences over a multiyear period for a given group of learners), a field of study (all the planned learning experiences over a multiyear period in a given discipline or area of study), and a course of study (all the planned learning experiences for a period of 1 year or less in a given field of study). All three levels of curriculum work are important. Substantive differences exist between evaluating a program of study and a field of study, and differences of scope exist between evaluating a field of study and a course of study. The foregoing analysis yields this stipulative definition of curriculum evaluation: The assessment of the merit and worth of a program of studies, a field of study, or a course of study

EVALUATION MODELS

How can the merit and worth of such aspects of curriculum be determined? Evaluation specialists have proposed an array of models, an examination of which can provide useful background for the process presented in this work. Bradley's Effectiveness Model How can a developed curriculum be assessed and evaluated for effectiveness? Bradley's (1985) book Curriculum Leadership and Development Handbook provides 10 key indicators that can be used to measure the effectiveness of a developed curriculum. The chart in Exhibit 12.1 is designed to help you identify your perceptions regarding the 10 indicators to appraise curriculum effectiveness in your school building or district. To assess how your school or

district meets each of the indicators, respond with a Yes or No in the column provided.

Tyler's Objectives-Centered Model One of the earliest curriculum evaluation models, which continues to influence many assessment projects, was that proposed by Ralph Tyler (1950) in his monograph Basic Principles of Curriculum and Instruction. As explained in this work and used in numerous

large-scale assessment efforts, the Tyler approach moved rationally and systematically through several related steps: 1. Begin with the behavioral objectives that have been previously determined. Those objectives should specify both the content of learning and the student behavior expected: "Demonstrate familiarity with dependable sources of information on questions relating to nutrition." 2. Identify the situations that will give the student the opportunity to express the behavior embodied in the objective and that evoke or encourage this behavior. Thus, if you wish to assess oral language use, identify situations that evoke oral language. 3. Select, modify, or construct suitable evaluation instruments, and check the instruments for objectivity, reliability, and validity. 4. Use the instruments to obtain summarized or appraised results. 5. Compare the results obtained from several instruments before and after given periods in order to estimate the amount of change taking place. 6. Analyze the results in order to determine strengths and weaknesses of the curriculum and to identify possible explanations about the reason for this particular pattern of strengths and weaknesses. 7. Use the results to make the necessary modifications in the curriculum. (as cited in Glatthorn, 1987, p. 273) The Tyler model has several advantages: It is relatively easy to understand and apply. It is rational and systematic. It focuses attention on curricular strengths and weaknesses, rather than being concerned solely with the performance of individual students. It also emphasizes the importance of a continuing cycle of assessment, analysis, and improvement. As Guba and Lincoln (1981) pointed out, however, it suffers from several deficiencies. It does not suggest how the objectives themselves should be evaluated. It does not provide standards or suggest how standards should be developed. Its emphasis on the prior statement of objectives may restrict creativity in curriculum development, and it seems to place undue emphasis on the preassessment and postassessment, ignoring completely the need for formative assessment. Similarly, Baron and Boschee (1995), in their book Authentic Assessment: The Key to Unlocking Student Success, stress that "we are

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encountering fundamental changes in the way we view and conduct assessment in American schools" (p. 1). And "sixty years have passed since we experienced such a deep-seated and thoughtful revaluation of our assessment methods" (p. 1)

- **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

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Points for Clarification

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Unit 2: Types and Approaches of Evaluation

- **Introduction**

- **Objectives**

- **Definitions**

- **Summary**

- **Revision**

- **Assignment/Activity**

- **Points For Discussion And Clarification**

- References / Further Readings

- **Introduction**

2   **Evaluation approaches** are conceptually distinct ways of thinking about, designing, and conducting evaluation efforts. Many of the evaluation approaches in use today make unique contributions to solving important problems, while others refine existing approaches in some way. Classification systems intended to sort out unique approaches from variations on a theme are presented here to help identify some basic schools of thought for conducting an evaluation.

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After these approaches are identified, they are summarized in terms of a few important attributes.

3   Since the mid-1960s, the number of alternative approaches to conducting evaluation efforts has increased dramatically. Factors such as the United States <u>Elementary and Secondary Education Act</u> of 1965 that required educators to evaluate their efforts and results, and the growing public concern for accountability of human service programs contributed to this growth. In addition, over this period of time there has been an international movement towards encouraging <u>evidence based practice</u> in all professions and in all sectors. Evidence Based Practice (EBP) requires evaluations to deliver the information needed to determine what is the best way of achieving results.

Curriculum evaluation is an essential phase of curriculum development. Through evaluation a faculty discovers whether a curriculum is fulfilling its purpose and whether students are actually learning. The purpose of this manuscript is to describe the implementation of a formative evaluation used by faculty members of a baccalaureate nursing program. PAIREDAR, a three phase generic model, was utilised to conduct this formative evaluation. The definition and description of this model are included. The process used by the evaluation team within the framework of the model is described in a step by step fashion. Faculty and student interview question sets and a sample course evaluation worksheet are presented.

Evaluation marks the end of one School Development Planning (SDP) cycle. ◊ In the review stage, the schoolís development priorities for the current cycle are decided on. ◊ In the design stage, courses of action are planned to address the chosen priorities. ◊ In the implementation stage, the planned courses of action are carried out. ◊ Finally, in the evaluation stage the following occurs: ⇒ During Implementation: Monitoring of the schoolís progress in addressing its priorities ⇒ After Implementation: Examining the impact of completed courses of action on the school, and gauging their effectiveness in enabling the school to address its priorities. When the evaluation stage is complete, the school can move into the next planning cycle. The link between one planning cycle and another is evidenced as: ◊ Projects which have been successfully implemented may now be consolidated and integrated into school life ◊ Projects which are still in progress may continue into the next planning cycle ◊ Projects deemed to be unsuccessful may be revised or replaced with new action plans that address agreed priorities The purpose of these guidelines is to give the school the knowledge, confidence and tools to evaluate the implementation and outcomes of the School Development Plan, so that the school can judge how well the plan has been implemented and how well it has worked.

What is Evaluation? Evaluation is ìthe systematic collection and interpretation of evidence leading to a judgement of value with a view to actionî (Beeby, 1997). In order for valid decisions to be made for further action, the school must be able to identify the relevant evidence, decide the best means of collecting it, and interpret the results in a meaningful way. These results can be used as the basis for ongoing decision-making around the issue being tested. Evaluation helps the school to answer the following questions: ◊ How are we doing? ◊ How do we know? ◊ What are we going to do now? A school may choose to answer these questions on a broad level by examining a general issue e.g. the student code of behaviour. The result of this may prompt a closer examination of a specific issue that may be of concern at a particular point in time. For example a school may choose to examine the implementation of the student code of behaviour in general, and having identified a specific issue that appears to be problematic may examine it in more detail. For example the effectiveness of student suspension could be a highlighted issue. On the other hand the examination may occur on a narrow level, where a specific issue has been identified in the course of the normal school year and is thus examined in depth. For example on the basis of discussion at a staff meeting a specific issue within the code may merit immediate attention. Examples of specific issues around the code of behaviour are among others punctuality, smoking, and truancy. In the context of SDP, evaluation is a description of how things are, measured against how they should be if the plan works out according to expectation. The information on how things should be is found in the priorities, targets, and tasks that the school has

preset in the design stage of SDP; while the information on how things are is found in the evidence collected during the evaluation stage of SDP. The linkage between these two classes of information is established by developing success criteria and by collecting evidence in order to test the criteria. Success criteria are statements of how things should be. They are developed from the priorities, targets, and tasks relevant to the issues being evaluated. They form the basis for the evidence to be collected so that the school can judge actual outcomes against expected outcomes.

* **Objectives**

Microbial adhesion on solid substrate is important in various fields of science. Mineral–microbe interactions alter the surface chemistry of the minerals and the adhesion of the bacterial cells to mineral surface is a prerequisite in several biobeneficiation processes. Apart from the surface charge and hydrophobic or hydrophilic character of the bacterial cells, the surface energy is a very important parameter influencing their adhesion on solid surfaces. There were many thermodynamic approaches in the literature to evaluate the cells surface energy. Although contact angle measurements with different liquids with known surface tension forms the basis in the calculation of the value of surface energy of solids, the results are different depending on the approach followed. In the present study, the surface energy of 140 bacterial and seven yeast cell surfaces has been studied following Fowkes, Equation of state, Geometric mean and Lifshitz–van der Waals acid–base (LW–AB) approaches. Two independent issues were addressed separately in our analysis. At first, the surface energy and the different components of the surface energy for microbial cells surface are examined. Secondly, the different approaches are evaluated for their internal consistency, similarities and dissimilarities. The Lifshitz–van der Waals component of surface energy for most of the microbial cells is realised to be approximately 40 mJ/m^2±10%. Equation of state and Geometric mean approaches do not possess any internal consistency and yield different results. The internal consistency of the LW–AB approach could be checked only by varying the apolar liquid and it evaluates coherent surface energy parameters by doing so. The electron-donor surface energy component remains exactly the same with the change of apolar liquid. This parameter could differentiate between the Gram-positive and Gram-negative bacterial cells. Gram-negative bacterial cells having higher electron-donor parameter had lower nitrogen, oxygen and phosphorous

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content on their cell surfaces. Among the four approaches, LW–AB was found to give the most consistent results. This approach provides more detailed information about the microbial cell surface and the electron–donor parameter differentiates different type of cell surfaces.

- **Definitions**

There are various types of evaluations but two main philosophical approaches: **formative** and **summative**. After a brief introduction to these two approaches, we shall share several specific types of evaluations that fall under the formative and summative approaches.

Formative evaluation is an on-going process that allows for feedback to be implemented during a program cycle. Formative evaluations (Boulmetis & Dutwin, 2005):

- Concentrate on examining and changing processes as they occur
- Provide timely feedback about program services
- Allow you to make program adjustments "on the fly" to help achieve program goals

COMMON TYPES OF FORMATIVE EVALUATION

- Needs assessment determines who needs the program, how great the need is, and what might work to meet the need.
- Structured conceptualization helps stakeholders define the program, the target population, and the possible outcomes.
- Implementation evaluation monitors the fidelity of the program delivery.
- Process evaluation investigates the process of delivering the program, including alternative delivery procedures.

Adapted from the Web Center for Social Research Method's Research Methods Knowledge Base (http://www.socialresearchmethods.net)

Summative evaluation occurs at the end of a program cycle and provides an overall description of program effectiveness. Summative evaluation examines program outcomes to determine overall program effectiveness. Summative evaluation is a method for answering some of the following questions:

- Were your program objectives met?
- Will you need to improve and modify the overall structure of the program?
- What is the overall impact of the program?
- What resources will you need to address the program's weaknesses?

Selfñevaluation Tools The following chart provides a basic guide regarding the use of selected tools for gathering quantitative and qualitative information. Some tools can be designed for collecting either type of information by incorporating a combination of closed and open questions in the selected tool.

Summary of approaches

The preceding section was used to distinguish between fifteen evaluation approaches in terms of their epistemology, major perspective, and orientation to values. This section is used to summarize each of the fifteen approaches in enough detail so that those placed in the same cell of Table 1 can be distinguished from each other.

Table 2 is used to summarize each approach in terms of four attributes— organizer, purpose, strengths, and weaknesses. The organizer represents the main considerations or cues practitioners use to organize a study. The purpose represents the desired outcome for a study at a very general level. Strengths and weaknesses represent other attributes that should be considered when deciding whether to use the approach for a particular study

Self-evaluation Tools ñ Quantitative and/or Qualitative?

Quantitative

Qualitative

Desk Research

SCOT Analysis

Closed Questionnaires	Open Questionnaires
Checklists	Interviews
Standard Forms	Force Field Analysis
Logs, Diaries, Recordings etc	Spot Check
Evaluation Grids	Critical Incident Analysis
	Self-evaluation Profile

Desk Research ñ use of documentary evidence e.g. Homework journals, copies, exam results, rolls, etc. Field Research ñ surveying school partners as appropriate: ♦ Questionnaires ñ closed & open ♦ Checklists ñ narrow & sharpen focus ♦ Interviews ñ structured & unstructured, individual & group ♦ Standard Forms ñ promote consistency of data recording ♦ Logs ñ diaries, video recordings etc. ♦ SCOT Analysis ñ good basis for group discussion ♦ Evaluation Grids ñ records interaction between variables. Explanation and examples of both desk research and field research tools listed above can be found in Unit 3 Section II of these Guidelines. Further Tools Apart from the desk research and field research tools which may have already been used during the review stage of the planning process, the following field research tools are useful: 1. Force Field Analysis 2. Spot Check 3. Critical Incident Analysis 4. Self-Evaluation Profile 5. Summative Evaluation Tool 5: 10 1. Force Field Analysis: The user is asked to identify three things which help and three things which hinder the successful outcome of a specific issue e.g. Ability to understand the teacher Use: ♦ It is useful as a means of identifying progress of implementation as well as providing information on the individual/classroom experience. Advantages: ♦ The teacher can administer this tool quite easily in her/his classroom ♦ It gives a quick view of the issues affecting the student, and can act as a catalyst for more extensive evaluation ♦ It is easily adapted to suit different issues. Disadvantages: ♦ The collation and analysis of response may be difficult because of the open nature of the responses. 2. Spot Check: The user is asked to circle her/his response to a range of closed questions relevant to the issue e.g. A specific lesson in your subject Use: ♦ It yields an immediate response from the students. Advantages: ♦ It is a useful tool for measuring the match between teacher and student perception of what is going on in the class ♦ The task group/teacher has complete flexibility in framing the questions to be asked and the language used in the asking ♦ The template can be adapted to

suit any particular set of information that one is seeking. Disadvantages: ♦ Validity of response could be a problem. 3. Critical Incident Analysis: The user discusses a chosen incident with the individual/group in order to flesh out the consequences of a specific course of action e.g. Back-answering a teacher. A particular incident that created conflict in the school is taken. The individual/group, with the assistance of a teacher, looks at the incident in relation to the following questions: o What happened? o Who was involved? o What action was taken? o How effective was the action? o What was the response to the action taken? o What other action(s) could have been taken? o What would have assisted those involved to do things differently?

Undertaking the Self-evaluation Once the preliminary stages are complete, all that remains is to undertake the self-evaluation. The importance of the preliminary stages, especially when carrying out the self-evaluation for the first time, cannot be over-stressed. It is these stages that offer a reasonable guarantee of success in the actual self-evaluation. The steps below give a sequence of actions for completing the self-evaluation.

- **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

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Points for Clarification

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Unit 3: Emerging trends in evaluation –CCE, Teacher Made Tests, Grading System

- **Introduction**

- **Objectives**

- **Definitions**

- **Summary**

- **Revision**

- **Assignment/Activity**

- **Points For Discussion And Clarification**

- References / Further Readings

- **Introduction**

According to NCTE (1998) teacher is the most important element in any educational' program. He plays a central role in implementation of educational process at any' stage. The level of achievement of learner is determined by teacher competence. So the quality of education basically depends on the quality of teachers. Kothari commission has very rightly said, "The destiny of India is being shaped in its classrooms." As the population in India is growing very rapidly day by day the need of well qualified and professionally trained teachers will also increase in the coming years. So lots of efforts should be made to improve teacher education. Teacher education is a continuous process and its pre-service and in-service components are complimentary to each other. Education is instrumental in the preparation of teachers who can in their practice ensure transformative learning, where teacher and learner, learner and learner are co-constructors of knowledge. Today there are new expectations for education where the focus is on having

teachers - be futurist leaders to ensure sustainable education. The paradigm shift is from teacher dominated classroom practices to that of partnership between the teacher and the learners and their peers. The key role of educational institutions is reflected in a variety of initiatives taken to transform the nature and function of education-both formal as well as non-formal. Universal accessibility to quality education is considered essential for development. This has necessitated improvement in the system of teacher education so as to prepare quality teachers.

- **Objectives**

Evaluation has a long history. As Guba and Lincoln (1981) pointed out, a Chinese emperor in 2200 b.c. required that his public officials demonstrate their proficiency in formal competency tests. In the United States, the concern for evaluating schools can be traced at least as far back as the recommendations of the Committee of Ten, which at the end of the 19th century set perhaps the first example of "evaluative standards" for the nation's secondary schools (National Education Association, 1969). In recent years, however, the interest in curriculum evaluation in particular has seemed to increase markedly. The public's insistence on educational accountability, the experts' demands for educational reform, and the educators' concomitant need for evidence of results have all contributed to the current interest in theories and methods of curriculum evaluation. Unfortunately, much of this interest seems to have resulted in an ill-conceived obsession with test results. A broader perspective and more diversified approaches seem necessary. This desired breadth and diversification have been reflected throughout this work. Chapter 6 described a comprehensive assessment model that can be used in improving a program of studies. Chapter 8 emphasized the importance of evaluating new courses of study. Chapter 11 described the importance of curriculum alignment. The intent of this chapter is to bring all these approaches into focus and to provide for greater understanding of the evaluation process. To that end, it begins by proposing a broad definition of the term curriculum evaluation. It then describes several evaluation models. It concludes by proposing a comprehensive and eclectic process that can be used to evaluate a field of study, which is perhaps the most difficult curricular element that evaluators face

Teacher education is a program related with teacher proficiency and competence that would make them competent enough to face new challenges in the education. Now a days the field of education is not only limited with books but has broadened in various new horizons. Development and changes in education have affected teacher education necessitating review and reforms. It demands understanding with investigative minds, assimilating the required transformations, accommodating and

responding to the universal needs. We also need to train teachers with new perspectives as the outer world is in the classroom and schools are opening to the world. The pre-service and in-service teacher education programs have shown paradigm shift with its emphasis on globalization and individualization. This main purpose of this paper is to indicate main changes that has incurred in teacher education in India and also provide an overview of trends, reforms and innovations in teacher education (integrated teaching, teacher curriculum and teacher innovations). It also discusses the need of teacher education program to be innovative and various practices that can be included. It has been recognized that teacher education program should be structured and modified in a way that enables them to respond dynamically to the new problems and challenges in the field of education, then only teacher can help in national development.

- **Definitions**

The foci of curriculum evaluation also need to be expanded. To use the concepts of this present work, curriculum evaluation should be concerned with assessing the value of a program of study (all the planned learning experiences over a multiyear period for a given group of learners), a field of study (all the planned learning experiences over a multiyear period in a given discipline or area of study), and a course of study (all the planned learning experiences for a period of 1 year or less in a given field of study). All three levels of curriculum work are important. Substantive differences exist between evaluating a program of study and a field of study, and differences of scope exist between evaluating a field of study and a course of study. The foregoing analysis yields this stipulative definition of curriculum evaluation: The assessment of the merit and worth of a program of studies, a field of study, or a course of study

- **Summary**

That broader perspective mentioned above requires a less constricting view of both the purposes and foci of curriculum evaluation. In reviewing the literature and acquiring a broader understanding of purpose, two concepts delineated by Guba and Lincoln (1981) seem especially useful: merit and worth. Merit, as they use the term, refers to the intrinsic value of an entity—value that is implicit, inherent, and independent of any applications. Merit is established without reference to a context. Worth, on the other hand, is the value of an entity in reference to a particular context or a specific application. It is the "payoff" value for a given institution or group of people. Thus, a given English course may seem to have a great deal of merit in the eyes of experts: It may reflect sound theory, be built on current research, and embody content that experts deem desirable. The same course, however, may have relatively little worth for a teacher instructing unmotivated

working-class youth in an urban school: It may require teaching skills that the teacher has not mastered and learning materials that the students cannot read. In this sense, then, curriculum evaluation should be concerned with assessing both merit and worth.

India has a large system of education. There are nearly 5.98 lakh Primary Schools, 76 lath Elementary Schools and 98 thousand 4igh / Higher Secondary Schools in the country, bout 1300 teacher education institutions for elementary teachers and nearly 700 colleges of education / university departments preparing teachers for secondary and higher secondary schools. Out of about 4.52 million teachers in the country nearly 3 million are teaching at the primary/elementary level. A sizeable number of them are untrained or under-trained. In certain regions, like the North-East, there are even uncle qualified teachers. As far as in-service education is concerned the situation is not very encouraging. In this scenaric it has been observed that teacher educators are not professionally committed and overall competencies of teachers leave much to be desired. The quality of pre-service education has actually shown signs of deterioration. Naseem & Anas (20 11, pg. 187) in their study discussed about the various problems that are existing in Indian Teacher Education. While Sharma (2012) stressed on the fact that ICT can play a major role in professional growth of the teacher and shaping the global economy. Unless teacher educators model effective use of technology in their own classes, it will not be possible to prepare a new generation of teachers who effectively use the new tools for teaching and learning. All these problems are closely associated with increase in sub-standard institutions of teacher education and there are numerous reports of gross malpractices; and the support system provided by the State Councils of Educational Research and Training (SCERTs) and the University Departments of Education has been insufficient and there is no support system below the state level. The DIETs are charged with the responsibility of organizing pre-service and in-service programmes in addition to being the nodal resource centers for elementary education at district level. Likewise, Colleges of Teacher Education (CTEs) and Institutions of Advanced Study in Education (TASEs) have been given the responsibility of introducing innovations in teacher education programmes at the secondary and higher secondary stages and in vocational education. Although National Council for Teacher Education (NCTE) as a non-statutory body has taken several steps as regards quality improvement in teacher education. Its major contribution was to prepare Teacher Education Curriculum Framework consequently; teacher education curricula have witnessed many changes in teacher preparation programmes in various universities and boards in the country. During the last decade, new thrusts have been posed due to rapid changes in the educational, political, social and economic contexts at the national and international levels. Curriculum reconstruction has also become imperative in the light of some perceptible gaps in teacher education. Teacher education by and large,

is conventional in its nature and purpose. The integration of theory and practice and consequent curricular response to the requirements of the school system still remains inadequate. Teachers are prepared in competencies and skills which do not necessarily equip them for becoming professionally effective. Their familiarity with latest educational developments remains insufficient. Organized and stimulatoiy learning experiences whenever available, rarely contribute to enhancing teachers' capacities for self- directed lifelong learning. The system still prepares teachers who do not necessarily become professionally competent and committed at the completion of initial teacher preparation programmes. A large number of teacher training institutions do not practice what they preach. Several of the skills acquired and methodologies learnt are seldom practiced in actual school system. This highlights the need to bring realism and dynamism in the curriculum. Problems of Teacher Education It is universally acknowledged that education is an effective means for social reconstruction and to a great extent it offers solutions to the problems a society is faced with. These problems may be economic, social, cultural, political, moral, ecological and educational. Since the teachers play a major role in education of children, their own education becomes a matter of vital concern. Various problems in the way of teacher education are following: • Selection problem • Short Duration of Teacher Training Programs • Incompetency of Pupil Teachers • Teacher Education Program have narrow and • rigid curriculum • Superficial Practice teaching • Problem of supervision of teaching • Deficient in content of the Teaching Subject's • Knowledge • Methods of Teaching are lacking in innovation - • Segregation of Teacher Education Department • Poor Academic Background of Student-Teachers • Deficient in facilities for pupil-teacher • Lack of Regulations in Demand and Supply • Lack of facilities for Professional Development • Insufficient financial grants • Narrow Scope of Teacher Education • Lack of Culture-Specific Pedagogy Teacher education must, therefore, create necessary awareness among teachers about their new roles and responsibilities. Education of teachers needs to strengthen and stress upon the main attributes of a profession, such as, the systematic theory, rigorous training over a specified duration, authority, community sanction, ethical code and culture, generating knowledge through research and specialization. It is acknowledged that formal professional training on continuous basis is necessary for becoming a good teacher as it caters to the development of one's personality and sharpening of communication skills and commitment to a code of conduct. Emerging Trends and Innovations Innovation is usually understood as the introduction of something new and useful, like introducing new methods, techniques, or practices or new or altered products and services. Schools or teacher education institutions can carry out innovations or experimentation on any aspect of their work related to teaching-learning, training or management of schools in order to improve efficiency of the institution to overcome problems and difficulties, they face in day to day functioning. The present structure of teacher education is supported by a network of

national, provincial and district level resource institutions working together to enhance the quality and effectiveness of teacher preparation programs at the pre-service level and also through in- service programs for serving teachers throughout the country. Teacher education is now becoming more ye to the emerging demands from the school system. Because the changing educational needs of the student and advancement in technology has widen the area of responsibilities of the teacher. Now teacher has to perform various role like encouraging, Supporting and facilitating in teaching-learning situations which enables learners (students) to discover their talents, to realize their physical and intellectual potentialities to the fullest, to develop character and desirable social and human values to function as responsible citizens. Suggestions (1) The courses of studies in theory and practice should be restructured. For this research should be conducted comprehensively to realize the goals of teacher education. The results of these researches should be given due importance in designing the curriculum of teacher education. (2) The method of teaching in the teacher education should be reorganized according to the changing demand of education system. Special innovative programmes like seminars, Workshops, conferences, projects and discussions should be organized regularly for the improvement of teaching learning process in various fields. (3) The admission procedures of B.Ed. should be completely restructured so that only those who have aptitude of teaching are able to take admission in this course as the increasing number of colleges of B.Ed. has made this course accessible for everybody (4) Now a days the number of self- financing colleges are mushrooming like shops and they have made it as their money making factory which detrimental for education in future. Therefore for regular inspection should be done to ensure quality in teacher education. The affiliating bodies for teacher education should frame such parameters which can enhance the teacher education program in qualitative aspect rather than quantitative aspect. (5) In order to remove the myth or misconception that the training in teacher education department is superficial and is not incorporated in real situation the professional attitude should be developed by organizing various types of facilities like school assembly, social work, field work, surveys, laboratory and other co-curricular activities (6) State Education department can have planning unit which can help in regulating the demand and supply of teachers at various levels of schools. As it has been observed that there is big gap between demand and supply in various states. The whole scenario of education is changing after Right to Education Act 2009, the demand for teachers at various level has tremendously increased .Moreover today is the time for inclusive education which leads to demand of special teachers/educators and we all are aware of the fact that there is scarcity of special educators.. So a balance should to be maintained for better results. (7) The training or the teaching practice of pupil teachers held in the school should be closely associated with teaching staff in education collages in planning the content to be covered and method to be used by the pupil teachers to have useful implications for school rather than disturbing their

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routine schedule. Moreover the real teaching practice should be supervised by the teachers in a systematic way so that it fulfills the objectives of teacher training. (8) It should be made mandatory that a teacher education department should have a demonstration school which should have certain facilities such as laboratories, libraries and other important audiovisual equipments. This can be of great help to formulate the policies, program for refining the education system. (9) The whole system of education is changing at a greater speed. The teacher education department should conduct research on teaching curriculum and evaluation procedure in the regular university departments. Extension programs and Exchange programs with different universities within India and outside India enrich the teacher education programme enormously. So such programs should be sponsored by government and university so that different academicians from different disciplines can contribute in the qualitative aspect of teacher education.

o   Revision

Traditionally, in the context of international development assistance, the objective of evaluation has been to measure project and programme outputs and outcomes. According to Cracknell (1988), in the 1950s evaluation began to be implemented in US-based organizations (World Bank, UN, USAID), focusing on appraisal rather than evaluation. Agencies were trying to design projects according to a logical model and to establish mechanisms and indicators to measure project outputs. In the '70s the Logical Framework Approach (LFA) was developed as a tool for planning, implementing, monitoring and evaluating projects according to criteria that permit measurement of successful outputs. Clearly, at this stage we can speak of results-focused evaluation, highlighting evaluation as a product and not as a process. In the second phase, during the 1980s, there was an expansion of interest in evaluation. International agencies began institutionalizing evaluation and evaluation units were set up, not only in the United States, but also in Europe, mainly as an accountability tool to satisfy public opinion and the government's need to know how public aid funds were used. At this stage, international organizations became more professional in carrying out evaluations focused on the long-term impact of aid assistance. In the third phase, agencies have internalized the meaning of and the need for the evaluation function within an organization. They are focusing on evaluation as a strategic tool for knowledge acquisition and construction with the aim of facilitating decision making and organizational learning. During this period, agencies are conscious of the relevance and importance of evaluation, but resources allocated to evaluation units are still insufficient to allow them to meet their objectives satisfactorily. Aid agencies still do not have the necessary capacity for developing theory and methodologies (Rebien 1997). Emphasis is given to the

evaluation process as a tool for individual and organizational understanding and learning, without overlooking the need for accountability. In this context, participatory and empowering evaluation represents an interesting development in approach and methodology aimed at achieving different objectives. For example, Kushner (2006) suggests that the basic problem in the previous phases was that we were learning what results were being achieved, but neither how they were being achieved nor what was being achieved that fell outside of the results matrix. Governments needed to learn about change processes, principally so as to be able to build on the strengths of innovation and to replicate success. The methodological response was to focus evaluation on analyzing change processes and contexts: points of resistance to change; how organizations constrain and empower to change people; those aspects of change potential that are limited to certain contexts and those that are transferable across contexts; how innovations gain leverage within social and political structures; and how people actually do (or do not) change behaviour patterns. The result was the emergence of what became known as 'Responsive Evaluation' and further encouragement for development of other models such as the 'utilisation-focused evaluation'. Nowadays the whole international development assistance world has been going through further major changes. The UN Reform and the Post-Paris consensus on Aid Effectiveness are reshaping the purpose and strategies of international development assistance. In March 2005, Ministers and other high-level officials of some 85 developed and developing countries, as well as heads of some 20 bi- and multilateral development organizations, gathered in Paris, France to discuss ways to improve the quality of development assistance. The message coming out of Paris was loud and clear: "Development assistance works best when it is fully aligned with national priorities and needs." As reaffirmed in Paris, sound national development strategies, combined with strong national leadership, form the basis for successful development cooperation. Such 'ownership' is also a prerequisite for achieving the commitments of the United Nations' Millennium Declaration. This is also the vision expressed in the Secretary-General's March 2005 report, In Larger Freedom, which, following the recommendations of the Millennium Project, calls for the preparation of ambitious MDG-based national development plans and the close linkage of development, security and human rights. The International development community attaches prime importance to supporting the development of high quality, MDG-based national development plans such as those articulated in poverty reduction strategies (PRS), and in doing so through the broad consultative process endorsed in Paris. To turn the commitments made in Paris into practice, future actions will focus in the following areas: Evaluative knowledge streams should highly be focused on utilization. MacKeith (2005) suggests that simply having M&E information available does not guarantee that it will actually be used, whether by program managers in their day to day work, or by budget officials responsible for advising on spending options, or by a congress or parliament

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responsible for accountability oversight. This underscores the dangers of a technocratic view of M&E, as a set of tools with inherent merit, and the fallacy that simply making M&E information available would ensure its utilization. Utilization is the yardstick of 'success' of an M&E system; conversely, it would be hard to convince a skeptical finance ministry that it should continue to fund an M&E system whose outputs are not being utilized. To ensure the relevance, and thereby the use of evaluative knowledge, it is critical that demand—from national governments and civil society, not just from donors—drives the supply of data and that strategies to strengthen statistical systems are part of a broader reform agenda. This is possible only by strengthening a pro-evaluation culture within societies and organizations, and by acknowledging the fact that any evaluative process is inevitably a political process (Kusek, Rist & White, 2005). M&E systems provide critical information that empowers policymakers to make better-informed decisions, or, in the case of the MDGs, to target appropriate resources and provide policy support for their achievement. At the same time, providing this kind of information may lessen the number of options available to politicians, leaving them less room for maneuver in their policy making. Finally, within a human rights approach, evaluation should focus on the most vulnerable populations to determine whether public policies are designed to ensure that all people enjoy their rights as citizens, whether disparities are eliminated and equity enhanced, and whether democratic approaches have been adopted that include everyone in decision-making processes that affect their interests.

- **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

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◉   References / Further Readings

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Unit 4:   Differential evaluation of PwID in inclusive setup

- **Introduction**

- **Objectives**

- **Definitions**

- **Summary**

- **Revision**

- **Assignment/Activity**

- **Points For Discussion And Clarification**

- References / Further Readings

- **Introduction**

The concept of inclusive education has brought with itself the much needed share of equality in approach for the education of the 'disabled' by giving them a leveled field to rightly exhibit their differential abilities, proving themselves capable enough to learn and perform together, at par with their non-disabled peers. And with this shift in approach, there also emerges the need and challenge to tailor the teaching strategies or the means of instructional delivery in the inclusive classrooms, to address the diverse learning needs of all learners in an equitable manner. Acknowledging the capabilities or 'differential abilities' of all learners, the education of children with special needs in inclusive schools becomes more of a shared responsibility between the different stakeholders involved (Ahmad, 2015a; Praisner, 2003); demanding a shift in attitude, availability and accessibility of

infrastructure, pedagogy, need-based methods and materials for instructional delivery, assessment and evaluation; and the much evident issue of acceptance and accommodation at all levels in the education system (Ahmad, 2014; 2015b; Stainback and Stainback, 1984). Addressing the individual learning needs of all children, youth and adults, with a specific focus on those vulnerable to marginalization and exclusion; inclusive education as an approach implies all learners, with or without disabilities, to be able to learn together through access to common pre-school provisions, schools and community educational setting with an appropriate network of support services, which can be possible only in a flexible education system that assimilates the needs of diverse learners and adapts itself to meet these needs, ensuring that all stakeholders in the system are comfortable with diversity and see it as a challenge rather than a problem. Researches on inclusive education, have predominantly focused on the success stories of inclusion in developed countries in North America and the Western Europe, that have made significant progress in inclusive education (Arnsen and Lundahl, 2006; Ferguson, 2008; Gr"onlund et al., 2010; Kearney and Kane, 2006; Meijer et al., 2007; Norwich, 2008); however, the status of inclusive education in the developing countries in Africa, Asia and the Eastern Europe, typically highlights difficulties in the implementation of inclusive education (Charema, 2007; Chitiyo and Chitiyo, 2007; Singal, 2006). Among the prevalent barriers to the successful implementation of inclusive education like - limited governmental support, ineffective policies and legislation, inadequate funding, insufficient trained teachers and support staff, political instability, and economic crisis; the ineffective and inefficient use of assistive technologies is seen to be a major obstacle hindering inclusion (Chitiyo, 2007; Ellsworth and Zhang, 2007; Gr"onlund et al., 2010; Singal, 2008). Students with disabilities are found to be frequently trapped in a vicious cycle of exclusion from education, society and mainstream development programmes due to lack of necessary support and the means for equal participation (Ahmad, 2015a). Effective technology integration can help provide all learners the ability to access the general education curriculum, offering them multiple means to complete their work with greater ease and independence in performing tasks that they were formerly unable to accomplish, or had great difficulty in accomplishing (Roberts et al., 2008; Van, 2007); thus addressing the 'functional barriers' by increasing, maintaining, or improving their learning outcomes in a diverse world of abilities and expectations. Education is the most essential ingredient in the development and empowerment of individuals, and inclusion in education irrespective of the varied socio-economic differences and the differences in 'abilities' and 'disabilities' (Praisner, 2003), undoubtedly makes this foundation much stronger (Ahmad, 2014). A school system emphasizing education for all should ensure the right of all children to a meaningful education based on individual needs and abilities (Johnson, 2002). Any child may experience a special need during the course of his educational years (UNESCO, 1994), and as a result, some children feel 'left-outs' and never enter school or enter

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only for a few years and, as repeaters, or become 'drop-outs' or 'pushed-outs', without their needs having been met. These children are a vivid illustration of the failure of schools to teach rather than their own failure to learn (Lindsey, 2007; Norwich, 2008). The geographical and social segregation of students with 'disabilities', from their 'non-disabled' peers, in learning and development, is further a failure of meaningfully integrating students in mainstream schools (Singh, n.d.). Inclusive education, more than mainstreaming the learners with special needs, is also concerned with identifying and overcoming all barriers for effective, continuous and quality participation of all in education (Ramchand and Dummugudem, 2014; Ahmad, 2015a), and providing a 'least restrictive environment' (LRE) to satisfactorily afford children with disabilities a meaningful educational benefit, together with others, in an accessible physical and human environment (ICF, 2001; Gal et al., 2010). Overtime, there has been a considerable shift in the understanding of 'disability', from the earlier medical interpretations of seeing 'disability' as a 'deficit' within the individual, to the concept of human rights and equitable opportunities for participation of all individuals (Wolery, 2000). The social model of disability sees the systemic barriers, negative attitudes and exclusion by society (purposely or inadvertently) as the ultimate factors defining disability. This explains 'disability' as resulting from the interaction of an individual's 'functional status' with the physical, cultural, and policy environments (Shakespeare and Watson, 1997), where if the environment is designed for the full range of human functioning and incorporates appropriate accommodations and supports, then individuals with functional limitations would not be 'disabled' and can actively participate in the society (Lang, 2001). Interventions, to be inclusive, should therefore not only be at the individual level, like medical rehabilitation, but also at the societal level, with provision of necessary support services, a universal design to make infrastructure more accessible, and a change in attitude and perception regarding disability; promoting inclusive education systems and community awareness programs to combat stigma. The International Classification of Functioning, Disability and Health (ICF) developed by the World Health Organization (WHO), uses the term 'participation' rather than 'inclusion' (ICF, 2001; Simeonsson et al., 2003), and acknowledges the many barriers faced by children with disabilities in their educational experience. It shifts the debate, which traditionally was much child-oriented, to become more focused on environmental factors that both affect and potentially facilitate children's participation in their everyday lives (ICF, 2001; Simeonsson et al., 2003; Gal et al., 2010). 'Functioning' and 'disability' are therefore seen as 'multi-dimensional' concepts relating to the body functions and structures of individuals, the activities people do and the life areas in which they participate, and the factors in their environment that affect these experiences. The 'activities' are basic actions deliberately undertaken in order to accomplish a task by an individual, as opposed to particular body functions or structures; while 'participation' implies the activities that are integral to economic

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and social life and the social roles that accomplish that life, like being able to attend the school. An individual's ability to function is affected by the environment they face, and a given level of impairment in the body function domain does not necessarily translate into an activity or participation limitation, if the environment accommodates an individual's different functional status. Disability, hence, is seen to arise out of 'activity limitations' and 'restrictions' placed upon 'participation' that are resulted from the interaction between the body structure and function limitation, and an unaccommodating environment (Gal et al., 2010). Within the spectrum of 'impairment', 'disability', and 'handicap'; the 'handicap' is what results from an 'impairment' or a 'disability', and limits or prevents the fulfillment of a role considered normal (depending on age, sex, social and cultural factors) for that individual (WHO, 1980). Assistive technology devices, here, aid in reducing, if not eliminating the handicap, and circumvent the deficit to help the individual participate in learning and related tasks, reducing barriers and promoting accessibility with considerable ease and efficiency, which otherwise might not have been possible. 'Assistive Technology' broadly spells out a continuum of tools, strategies, and services that match a person's needs, abilities and tasks, and includes evaluation of the needs of an individual with a disability, a functional evaluation of the individual in the individual's customary environment, and the selection, designing, fitting, customization, adaption, application, maintenance, repair, and replacement of assistive technology services, and their coordination with the existing education and rehabilitation plans and programs for inclusive development.

- **Objectives**

"The real miracle of technology may be the capacity it has to remove previously insurmountable barriers faced by persons with disabilities" (Simon, 1991). Technology has great potential in providing access for all learners, and the ability to access the general education curriculum. Assistive technology is a generic term that includes assistive, adaptive, and rehabilitative devices for individuals with disabilities and includes 'virtually anything that might be used to compensate for lack of certain abilities' (Reed and Bowser, 2005), ranging from low-tech devices like crutches or a special grip for a pen, to more advanced items like hearing aids and glasses, to high-tech devices such as computers with specialized software for helping dyslexics to read (WHO, 2009). Also known as 'technical aids', or 'assistive equipment', including information and communication technologies (ICT), universally designed technologies, educational technologies, emerging and innovative technologies, and accessible technologies; they can be 'any item, piece of equipment or product system that is used to increase, maintain, or improve the functional capabilities of individuals with disabilities, and help them to work

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around or compensate for a disability' (Goddard, 2004: p.2), in order to participate in the activities of daily life. From a simple device like a magnifying glass, to a complex computerized communication system; depending on their nature of use and application, assistive technology devices can be used by students with disabilities on their own or with assistance, in and outside the learning setup. Some of the examples of assistive technology devices are - touch control devices, alternative keyboards and mouse, speech-to-text word recognition tools, word prediction programs, word processors, grammar checkers, scanners, compact disc recording (CD-R and CD-RW) drives and spell checkers (Petty, 2012). Approaches in the use of assistive technology in inclusive education focus on using technology to train or rehearse, and to assist and enable learning. A large population of 'at risk' students are seen to need assistance, but since they often don't easily fit into a diagnostic profile, they often lack assistance. Assistive technology serves in bridging this gap by 'assisting' in the practice of educating children in the same classroom, including children with physical, mental and developmental disabilities (Smith et al., 2005); helping them to learn the material in a way that they can understand, by eliminating barriers that had been preventing them from being at the same level as their peers. Offering practical tools for application of the principles of cognitive theory to teaching and learning, assistive technology connects a student's cognitive abilities to an educational opportunity that may not be accessible due to a disability; like a student facing difficulty in decoding text can make use of a text-to-speech screen reader as a 'bridge' between the written text and the ability to process the information aurally and cognitively; while a student who has difficulty sequencing thoughts in text can use graphic outlining software as a bridge to visual processing skills (Hern´andez, 2003). Hence, with effective integration of assistive technology into the regular classroom, students can have the provision of multiple means to complete their work, with greater independence in performing tasks that they were formerly unable to accomplish or could accomplish with great difficulty; through suitable enhancements or changed methods of interaction with the technology, needed to accomplish such tasks.

The success and applicability of an assistive technology device is measured by its actual usage, ease in accessibility by its users and in their satisfaction in interaction with their environment. It is essential to ensure that the assistive devices are need-based, inexpensive to produce, purchase and maintain, easy to use, and effective, which can be ensured by the direct involvement of the potential users at each stage of designing and development.

1. Suitability to Users and their Environment - The devices should be compatible with the users' aspirations, emotional needs, and ways of life, and with their culture

and local customs; unobtrusive by local standards, and physically comfortable from users' perspectives. It should assure user safety, be useful in a variety of situations (Warger, 1998), and be durable, dependable and reliable especially in rural areas, remote areas and rugged conditions, and compatible with the ground surface and other conditions of a user's physical environment.

2. Inexpensive and Easy to Purchase - The devices should be low in purchase price. Government and/or NGOs can also support in the provision and purchase of the devices, free of charge or at subsidized rates. The devices should be easy and affordable to assemble or produce and maintain, so that keeping the devices in working order would require minimal resources and can be repaired with the use of locally available materials and technical skills.

3. Easy-to- Use - The devices should be easily understandable by users with limited exposure to technology, portable (easy to move from one place to another), and easy to operate without prolonged training or complex skills. Depending upon the differential abilities of the learners, and the context and feasibility of the approach, assistive provisions in education can help assist students with disabilities in learning, and a collaborative effort in the use of assistive devices, assistive technology, resource room support and innovative educational strategies to promote and sustain inclusion can support these students to learn at par with their non disabled peers in inclusive educational settings (Ahmad, 2014). Disability is seen to have more serious consequences for those students, who struggle with a 'duallydisadvantaged' life amidst additional handicapping conditions besides 'disability', like poverty, thereby having limited access to rehabilitation services and assistive devices. Trapped in a vicious cycle of exclusion from education, society and mainstream development programmes, without appropriate information, assistive devices and support services, such students lack the means for equal participation in education and development (Norwich, 2008). The resulting lack of skills is a barrier to meaningful employment opportunities later in life, further perpetuating the cumulative disadvantages. Assistive technology can help in meeting these 'disabling' needs by addressing the 'functional barriers' confronted by individuals with disabilities, including the sensory, cognitive, learning and physical disabilities.

- **Definitions**

Students having difficulty with fine motor skills may require larger keyboard while using a computer, an on-screen keyboard or speech recognition programs to coordinate with their learning tasks. The use of a standard keyboard in a computer

with access to a 'mouth- or head-stick', where the keys can be pressed with the pointing device can help students with mobility impairments; while Track balls, head trackers and touch screens can serve as suitable alternatives to the computer mouse. Software utilities can create 'sticky keys' that electronically latch the SHIFT, CONTROL, and other keys to allow sequential keystrokes to input commands that normally require two or more keys to be pressed simultaneously. Students with mobility impairments, using a wheel chair, may have their computer desks adjusted to a comfortable height, to pull up to the computer to work. Keyboard guards can be used by individuals with limited fine motor control, and repositioning the keyboard and monitor may help in enhancing accessibility; like mounting keyboards perpendicular to tables or wheelchair trays at head-height to assist individuals with limited mobility using pointing devices to press keys, and use of disk guides for inserting and removing diskettes. Left-handed and right-handed keyboards available for individuals who need to operate the computer with one hand, have the provision of more efficient key arrangements, than standard keyboards designed for two-handed users. For users with severe mobility impairments, keyboard emulation, including scanning and Morse code input, can be used with special switches that make use of at least one muscle over which the individual has voluntary control like - head, finger, knee, or mouth. In scanning input, lights or cursors scan letters, and symbols are displayed on computer screens or external devices, where hundreds of switches tailor input devices to individual needs. Speech recognition systems allow users to control computers by speaking words and letters, where a particular system is 'trained' to recognize specific voices. Abbreviation expansion and word prediction software can also help in reducing input demands for commonly used text and keyboard commands; and on-screen help may assist in efficient access to user guides for individuals who are unable to turn pages in books. Architectural or physical environmental barriers like the absence of ramps, elevators, automatic doors, Braille signage, and telecommunication devices, are also seen to deter and restrict the participation of students with disabilities. Therefore, infrastructural changes and adjustments in the schools and educational institutions (Campbell, 1989), like the availability of ramps; accessibility to classroom, workspace and labs through lifts; washrooms having counters and sinks with adjustable heights etc can be ensured through applicability of universal design for ease in accessibility, and can help address the hidden barriers preventing the equal access and participation of students with mobility impairments in education and social life.

- **Summary**

Assistive Technology for Students with Visual Impairment/Blindness Visually impaired students have difficulty accessing visual material in printed form or on the computer screen, where standard keyboards can aid in accessing Braille input devices, with Braille key labels assisting with the keyboard use. The OBR (Optical Braille Recognition) software can enable users having visual impairment to read Braille documents on a standard A4 scanner, scan the Braille document, analyze the dot pattern, translate the text, and present it on the computer screen. Refreshable Braille displays allow line-by-line translation of screen text into Braille, which can help in detailed editing. The Braille printers provide the 'hard copy' output for the visually impaired users. Scanners with optical character recognition can read printed material; which can then be stored electronically on computers, and be read using speech synthesis, or printed using Braille translation software and Braille printers. Such systems provide independent access to journals, syllabi, and homework assignments for the visually impaired students. Speech output systems can be used to read screen text, while the screen readers or the text-to-speech software like JAWS (Job Access with Speech) can help the user in adjusting the volume, pitch and speed of reading, and in choosing or adjusting to a male or female voice according to their preference. Screen readers including navigation tools allow users to skip from headline to headline, or category to category while reading. Using the synthetic speech, the computer can read text passages, analyze the phonetic structure of words and attempt re-constructing words by putting together a string of synthetic phonemes, ensuring easy understandability of the message by the student. The use of earphones for individuals using speech output systems can reduce and limit the distractions for other individuals present. Audio materials like talking books and audio cassettes of recorded lessons can be used by students with visual impairment. The use of sophisticated audio devices, CD players, cassette players, and recording machines can be used to record lectures, books and other study materials and help students in submitting their assignments in audio formats. The descriptive video service with a narrative verbal description of the visual elements displayed on the screen enables the students to automatically hear the descriptions of all the visual elements, providing the students with visual impairment an opportunity for better socialization and knowledge building (Petty, 2012). Assistive Technology for Students with Low Vision Students with low vision may find the standard size of letters on the computer screen or printed documents too small to read, while some may also not be able to distinguish one color from another. Use of large print key labels, special equipment for the modification of display or printer output, computer-generated symbols, both text and graphics enlarged on the monitor or printer, can prove useful to students with

low vision, especially in using standard word processing, electronic mail, spreadsheet, and other software applications. Adjusting the color of the monitor or changing the foreground and background colors, through special software like reversing the screen from black on white to white on black for individuals who are light sensitive, can help improve access and readability. Anti-glare screens can make screens easier to read, while voice output systems can also be used by people with low vision. The printed material can be read by scanners with optical character recognition and stored electronically on computers, where it can be read using speech synthesis or printed in large print. Assistive devices that are suitable for students with low vision may be used to aid in efficient learning like close circuit television, magnifying glasses and hand magnifiers, Braille language, talking calculators and tape recordings (Burgstahler, 1992).

Assistive Technology for Students with Hearing and/or Speech Impairments Word processing and educational software may help hearing impaired students in developing writing skills. Alternatives to audio output can assist the hearing-impaired computer user, in place of using a standard keyboard and mouse. Advanced speech synthesizers may act as substitute voices, providing a compensatory tool for students who cannot communicate verbally. Students with portable systems can participate in class discussions once adapted computers provide them with intelligible speaking voices. Students with hearing and/or speech impairments can use standard written or on-screen documentation without difficulty, with the development of adequate speech and language patterns using supportive aids like recorded tapes, speech trainers, photo albums, articulation charts, concrete objects and other visual cues, for language learning, speech training, and speech correction. While 'text-telephones' can help in allowing phone conversations to be typed and read rather than be spoken and heard, the 'computerized speech recognition' software allows the computer to change a spoken message into a readable text document that can be easily read by the hearing impaired students. Assistive Technology for Students with Specific Learning Disabilities For students having Specific Learning Disabilities, educational software can help in skill building, by offering multisensory experiences, positive reinforcement, individualized instruction, and repetition. Students having difficulty processing written information can complete writing assignments and tutorial lessons with the aid of computers, like the standard word processor may prove a valuable tool for students with Dysgraphia, an inability to write legibly. Quiet work areas and ear protectors may make computer input easier for students who are hypersensitive to background noise and get easily distracted. Adaptive devices like large print displays, alternative colors on the computer screen, and voice output can help in compensating reading problems. 'Electronic Math Sheets' help in the organization, alignment and working of the Math problems on a computer screen, where the numbers appearing can be read aloud through the speech synthesizer,

helping students facing difficulty in aligning Math problems using pencil and a paper. Software like 'Abbreviation expanders' can prove helpful with word processing to create, store, and re-use abbreviations for frequently used words or phrases, to ensure proper spellings for students who have difficulty in writing. The Paper-based Pen technology (Liao et al., n.d.), can record and link audio to what the student writes using the pen and the special paper, enabling note-taking while recording the teacher's lecture simultaneously, which the student can also listen to later by touching the pen to the corresponding handwriting or diagrams. This technology proves useful for students struggling with listening, writing, memory and reading skills. Students having difficulty interpreting visual material can improve comprehension and the ability to identify and correct errors when words are spoken or printed in large fonts. Computer documentation in electronic forms may be used with enlarged character and voice synthesis devices to ensure better accessibility to those with reading difficulties. Assistive technology has a major role in remediating and compensating the performance deficits experienced by students, enhancing the students' performance; and ensuring effective evaluation as an accommodation during testing, offering adequate solutions when an extended evaluation is needed. Effective technology integration in education can therefore help in addressing the functional barriers experienced by students with disabilities, providing them with equitable learning opportunities and a leveled field to rightly exhibit their differential abilities, through provision of necessary support and an equally accessible learning environment to all.

Overcoming Barriers to Access and Success With the emergence of the social model of disability, it is increasingly being argued that the greatest barriers to the inclusion of children with disabilities results from inaccessible environments (Gal et al., 2010). Besides, the attitude of teachers, and students, and their level of access and success with the technology use, the level of expertise and training of the teachers regarding the technology use and application; student perception, training and acceptance; and the curriculum adaptation and technology integration in the inclusive classrooms are some of the major challenges and decisive factors in the efficient use of assistive technology in inclusive education (Lang, 2001, Petty, 2012; Reed and Bowser, 2005).

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

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Points for Clarification

- ## References / Further Readings

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Unit 5:   Implications of evaluation for inclusion

- **Introduction**

- **Objectives**

- **Definitions**

- **Summary**

- **Revision**

- **Assignment/Activity**

- **Points For Discussion And Clarification**

- References / Further Readings

- **Introduction**

This guidance aims to help inspectors, and the governors and staff of schools, to identify what it means to be an inclusive school, and to diagnose the strengths and weaknesses of a school's practice in order to promote to bring about improvements in this area. This requires inspection reports to be more focussed on the impact of the school's strategies for addressing inclusion issues and, particularly, for promoting racial equality. Educational inclusion is more than a concern about any one group of pupils such as those pupils who have been or are likely to be excluded from school. Its scope is broad. It is about equal opportunities for all pupils, whatever their age, gender, ethnicity, attainment and background. It pays particular attention to the provision made for and the achievement of different groups of pupils within a school. Throughout this guidance, whenever we use the term different groups it could apply to any or all of the following: · girls and boys; · minority ethnic and faith groups, Travellers, asylum seekers and refugees; · pupils who need support to learn English as an additional language (EAL); · pupils with special educational needs; · gifted and talented pupils; · children "looked after" by the local authority; · other children, such as sick children; young carers; those children from families under stress; pregnant school girls and teenage mothers; and

· any pupils who are at risk of disaffection and exclusion1 . The document reinforces the strong emphasis on educational inclusion in the Evaluation Schedule, published in the inspection Framework, Inspecting Schools 2 and in the Inspection Handbooks3 . It also reflects those recommendations in the Macpherson Report which relate to schools and school inspection4 (see Annex 1). Although the guidance is written primarily for inspectors, it should help schools in monitoring and evaluating their own practice.5 The guidance complements that given in the Inspection Handbooks and in the guidance on subjects and courses. Many of the evaluation criteria have an educational inclusion dimension. A focus on educational inclusion is central to answering the eight key questions in the Evaluation Schedule, and to judging the overall effectiveness of a school.

- **Objectives**

Educationally inclusive schools An educationally inclusive school is one in which the teaching and learning, achievements, attitudes and well-being of every young person matter. Effective schools are educationally inclusive schools. This shows, not only in their performance, but also in their ethos and their willingness to offer new opportunities to pupils who may have experienced previous difficulties. This does not mean treating all pupils in the same way. Rather it involves taking account of pupils' varied life experiences and needs. The most effective schools do not take educational inclusion for granted. They constantly monitor and evaluate the progress each pupil makes. They identify any pupils who may be missing out, difficult to engage, or feeling in some way to be apart from what the school seeks to provide. They take practical steps – in the classroom and beyond – to meet pupils' needs effectively and they promote tolerance and understanding in a diverse society. For special schools, there is an additional dimension because their policies on inclusion must now include planning for a changing role alongside increasingly inclusive mainstream schools9 .

Statutory context Schools and inspectors must have regard for: i. the school's duties and obligations under existing legislation concerned with sex discrimination, race relations, special educational needs and disability discrimination10; ii ethical considerations related to values11 and social justice and how the school promotes pupils' spiritual, moral, social and cultural development; iii how well teachers promote the inclusive approach demanded by the National Curriculum when interpreting the educational objectives of subjects and courses provided12; iv Government policies aimed at raising educational standards, including: target setting by schools; promoting the inclusion of pupils with special needs or a disability; fostering better personal, community and race relations as highlighted in

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the Macpherson Report; and promoting social inclusion and race equality; and v OFSTED's role in responding to the recommendations of the Macpherson Report.

Funded initiatives If the school is receiving additional funding, including that linked to local or national initiatives for different groups, you must evaluate how effectively this provision is used to raise achievement and promote inclusion. These initiatives centre on raising standards, for example, by providing help in order to: · develop pupils' literacy, numeracy and information and communication technology skills; · improve pupils' behaviour; · improve pupils' attendance at school; · improve pupils' access to school; · support pupils with special needs in a mainstream school; · improve the continuity between the phases of education; · teach Traveller children and pupils learning English as an additional language; · promote links between special and mainstream schools; · encourage greater parental involvement and family learning; · introduce other activities related to a school's particular status as an early excellence centre, beacon or specialist school; and · make available learning mentors, study support, homework clubs and the like.

- **Definitions**

'Assessment for learning is any assessment for which the first priority in its design and practice is to serve the purpose of promoting pupils' learning. It thus differs from assessment designed primarily to serve the purposes of accountability, or of ranking, or of certifying competence. An assessment activity can help learning if it provides information to be used as feedback by teachers, and by their pupils in assessing themselves and each other, to modify the teaching and learning activities in which they are engaged. Such assessment becomes 'formative assessment' when the evidence is actually used to adapt the teaching work to meet learning needs.'1

As a result of this experience, which has been adopted and adapted in multiple contexts, they have constructed some fundamental principles that comprise a framework for assessment for learning. These principles state that assessment for learning:2 • is part of effective planning • is central to classroom practice • promotes understanding of goals and criteria • is sensitive and constructive • fosters motivation • recognises all educational achievement • focuses on how pupils learn • helps learners know how to improve • develops the capacity for peer and self-assessment • is a key professional skill. With these principles as the framework, some strategies have been developed and are claimed to have a number of positive effects on students and teachers. The most commonly-mentioned features of AfL in

the literature are the better use of questioning, feedback, peer and self-assessment and the formative use of summative tests where these are used in the schools or system concerned. Some research and inspection evidence has also been provided regarding the impact of AfL on students' achievement, though this aspect requires further rigorous research to arrive at stronger conclusions. Although most of the literature evaluates the effects of AfL as positive, contextual aspects emerge as possible obstacles for the feasibility of the approach, especially in those contexts in which the ideal conditions observed in research are not given. Further research on this is required as well, but some guidelines can be given on the basis of currently available studies. Policymakers should consider a careful design of dissemination strategies and possible contradictions between different policies. They should give clear messages to the educational community and the public about the view of assessment which is to be promoted or prioritised; the provision of support for dissemination processes through fostering school leadership; enough flexibility to allow some level of appropriation by practitioners; processes of monitoring the progress of dissemination; and commitment to sustain the policy over time. A whole-school commitment is required if AfL is to be successfully adopted, with all stakeholders being informed about and involved in the process. In addition, senior staff can play an especially important role in promoting, monitoring and generating the right conditions for adequate dissemination and implementation of AfL in their school through encouraging and facilitating teacher collaboration and discussion of the way AfL can inform and develop their current classroom practice.

- **Summary**

Testing inclusivity The following questions focus on educational inclusion and test the inspection evidence. · Are all pupils achieving as much as they can, and deriving the maximum benefit, according to their individual needs, from what the school provides? · If not, which pupils or groups of pupils are not achieving as much as they can? Why not? · Is the school aware of these differences? If not, why not? · How does the school explain differences between groups of pupils in terms of achievement, teaching and learning and access to curricular opportunities? Are these explanations well founded and convincing? · What action (including use of nationally funded or local initiatives) has the school taken or is it taking to raise the standards of attainment of pupils or groups of pupils who appear to be underachieving or at particular risk? If none, why? · If the school is taking action, is it appropriate and is it effective or likely to be effective? Are there any unintended consequences? How well are these consequences being handled? · What action is being taken by the school to promote racial harmony, to prepare pupils for living in a diverse and increasingly inter-dependent society and specifically to prevent and

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address racism, sexism and other forms of discrimination? Your enquiries should give you a view of the importance the school attaches to being inclusive, its understanding of the issues involved – particularly in terms of racial equality – and its ability to take appropriate action to ensure that its strategies are effective. The key questions are: does the school have strategies for promoting inclusion, including race equality, and how well are they working?

The importance of teachers using appropriate questioning to support student learning is an idea that emerges from the initial study of the ARG. Here the researchers noticed some problems in the way in which teachers were formulating and using questions during class interaction. They concluded that the questions used by teachers were often insufficiently challenging for the students. In addition, the time given to elaborate on an answer was too short.4 It was discovered that a better practice in questioning was essential for putting the principles of AfL into practice. The specific modifications were related to an increase in the 'wait time' (time given for students to think of an answer)5 and an improvement in the quality of questions employed by teachers in terms of greater use of those that are open rather than closed in character. This encourages students to use higher-order thinking skills to answer questions.6 Such practice requires the generation of a non-threatening climate of dialogue, where students feel free to share their ideas and expose their misconceptions without fear of giving an incorrect answer. The idea is that student learning is enhanced by opportunities for discussion of misconceptions and clarification of these in the classroom so that all students can learn from one another's mistakes or misconceptions.

*   **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:-

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Points for Discussion

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