

NATIONAL COMPLEX FOR DIFFERENTLY ABLED CHILDREN,

Dhaka

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ABSTRACT

This report is mainly focus on the importance of a space or differently able children. This report also highlights the universal accessibility consideration both interior and exterior of the buildings or any space. The design process consider the suitability of site, necessary functions and the main aim of the project is to make the people conscious about universal accessibility and make the differently able children a part of our social and cultural activity. This will make these children more strong, honest and self confident.

CHAPTER 01: Introduction

In Bangladesh 10% of the total population are physically challenged. Day by day the numbers of physically challenged people are increasing. These types of people are always neglected in our society. The basic difference between physically challenged people and physically able people are some peoples have permanent disability and some have temporary disability. Any time any where we can have accident for which we have to face the problem of disability.

1.1 Definition of Differently Able Body or Disability

Impairment is any loss or abnormality of psychology, physiological or anatomical structure or function. A disability is any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being. A handicap is a disadvantage for a given individual, resulting from impairment or a disability that prevents the fulfillment of a role that considered normal for that individual.

1.2 Types of Disability

- Physically Impaired
- Hearing and Speech Impaired
- Visually Impaired
- Mentally Impaired

1.3 Project Brief

Project Title: **National Complex for Differently Able Children**

Site: **Tejgaon, Dhaka**

Area: **5.46 acre**

Client: **Ministry Of Social Welfare**

1.4 Project Theme

The main objective of this project is creating a space for differently able children where they can get every facility which they need. There will be educational facilities, health facilities, medical facilities, laboratory, and workshop, social and cultural centre etc. Through this project these children can feel they are the part of the society. They can have every facility, every scope and every dream which differently able children have.

1.5 Rationality of the Project

A differently able child who may be in the wheel chair for rest of his life can be rehabilitated in the society under a medical guidance which is not only by medicine or by surgery but also by some special treatment named 'physiotherapy and occupational therapy' which may not be available in general hospital. These children also need special school where they can get treatment, care and motivation which a regular school can't provide.

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1.6 Objective of the Project

- To provides health care services through treatment and rehabilitation for child with disabilities in institutional care.
- To improve specific such as impaired concentration, motivation etc. Impeding work performance and socialization.
- To improves patient over all evaluation of themselves and their capabilities so that they can cope with physical social mental and economical problem.
- To reduce the social, cultural, and mental gap between the child and the normal child.

1.7 Site: Tejgaon, Dhaka

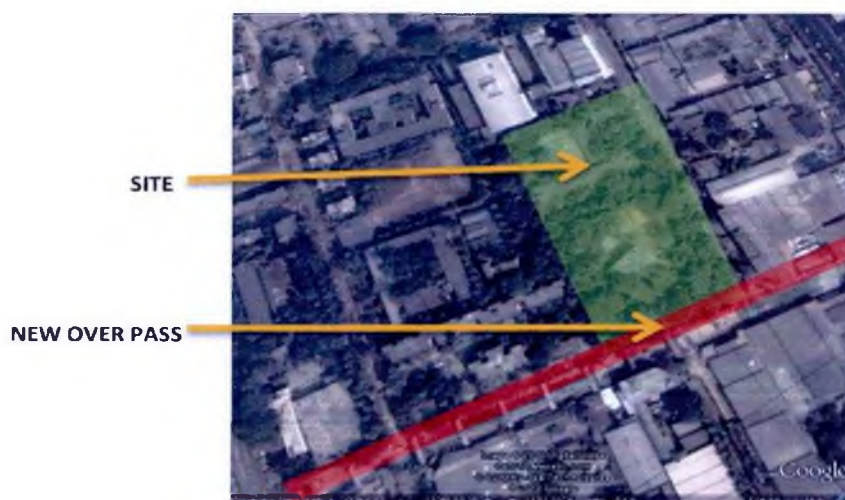


Fig.01. google image of site

1.8 Programs

Administration Building (Hospital)

- Lobby & Lounge
- Reception
- Waiting
- Display
- Hand wash & Toilets
- Director's Room (1 person + toilet)
- Assistant Director (1 person + toilet)
- Co-coordinator (1 person + toilet)
- Human resource officer (1 person + toilet)
- General staff (2 person)
- Fund raising authority
- Data Collection Room
- Field officer Room
- CBR Officer Room
- CBR Trainer's Room
- Account Manager (1 person)
- Finance Officer (1 person)
- General Staff (2 person)
- Conference Room (50 person)
- Clerks (4 person)
- Store
- Toilet

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Medical Care & Treatment

- Lobby
- Reception
- Waiting
- Doctor's Lounge
- Doctor's Chamber (6 person)
- Plaster & Dressing
- Nurse Station

Radiology Department: Diagnostic Facilities

- X-Ray
- C.T. Scan
- M.R.I
- E.T.T
- Endoscope

Pathology Department

- Central Pharmacy
- Laboratory + Store
- Blood Sampling Taking + Store
- Record Room
- Toilet

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Therapy Department

- Physiotherapy
- Occupational Therapy
- Hydrotherapy
- Speech & Hearing Therapy
- Mental Health Therapy

Special Education for 200 Children (per sector 50 person)

- Lobby + Waiting + Toilet
- Class rooms/Studio workshops + Toilets (5 no)
- Relative Equipments + Store (5 no)
- Activity Room
- Teacher's/Trainer's Common Room + Toilets
- Teacher's Workshop
- Headmaster Room + Toilet
- Administrative Room + Toilet
- Exhibition Space
- Librarian's room + Library
- Seminar Room
- Storage
- Toilet

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Cafeteria (50 people)

- Café
- Kitchen & Pantry
- Hand wash & Toilet

Multi Purpose Hall

- Lobby + Waiting
- Main Hall
- Storage
- Hand wash + Toilet

Vocational Training

- Lobby + Waiting
- Electrical Training (2 no)
- Telephone Operating Training (2 no)
- Carpentry workshop
- Sewing Training
- Mental workshop
- Computer Training
- Seminar Room
- Teacher's Room (2 no)
- Store + Toilet

CHAPTER 02: Site Appraisal

2.1 Historical and social background

Historically, the area has been a centre of industrial activity in the city. Numerous plants and factories are located in Tejgaon, in such diverse industries as garments, food processing, metal works, pharmaceuticals; etc. Tejgaon has emerged as an important business district of Dhaka. Tejgaon Airport in Dhaka, Bangladesh served as the country's sole international airport.

2.2 Site location and zoning

- Location: At Tejgaon industrial area
- Area: 5.46 acre
- Shape: It is a rectangular site. The site is elongated from north to south.
- Topography: Flat land

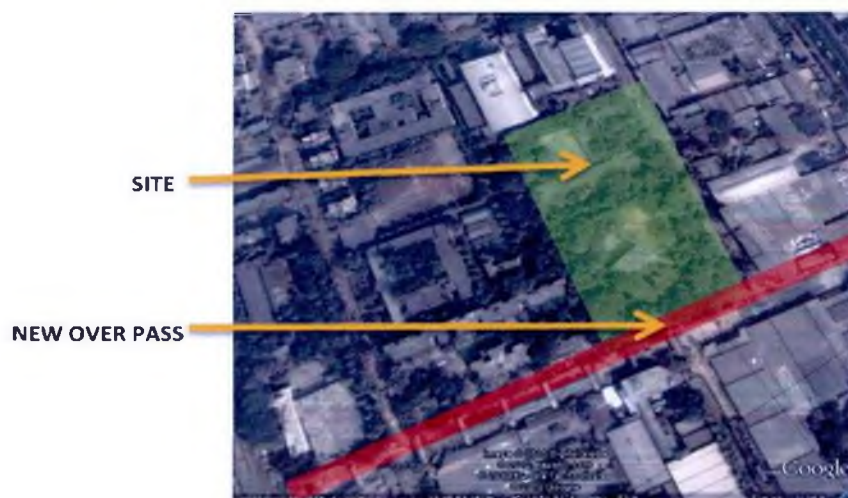
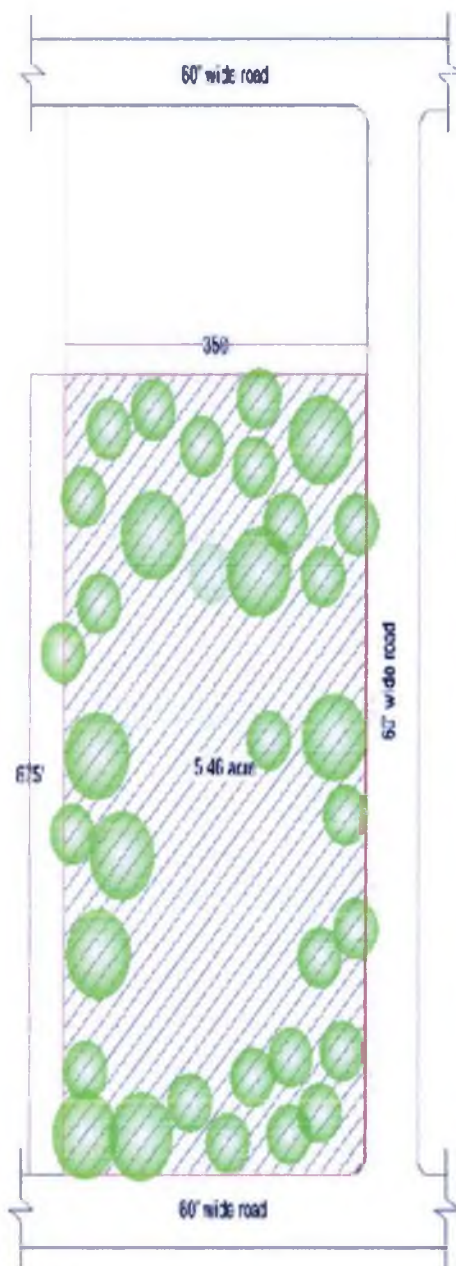


Fig.02. google image of site

2.3 Site Surroundings



Site is surrounded by some residential and industrial structure. Adjacent road is 60' wide. There are lots of trees in the site. The site is elongated from north to south. It is a rectangular site. Normally the traffic is minimum but at night the scene is different. Trucks and cars are parked on the road. It increases the traffic.



Fig.03. Photographs

NATIONAL COMPLEX FOR DIFFERENTLY ABLED CHILDREN

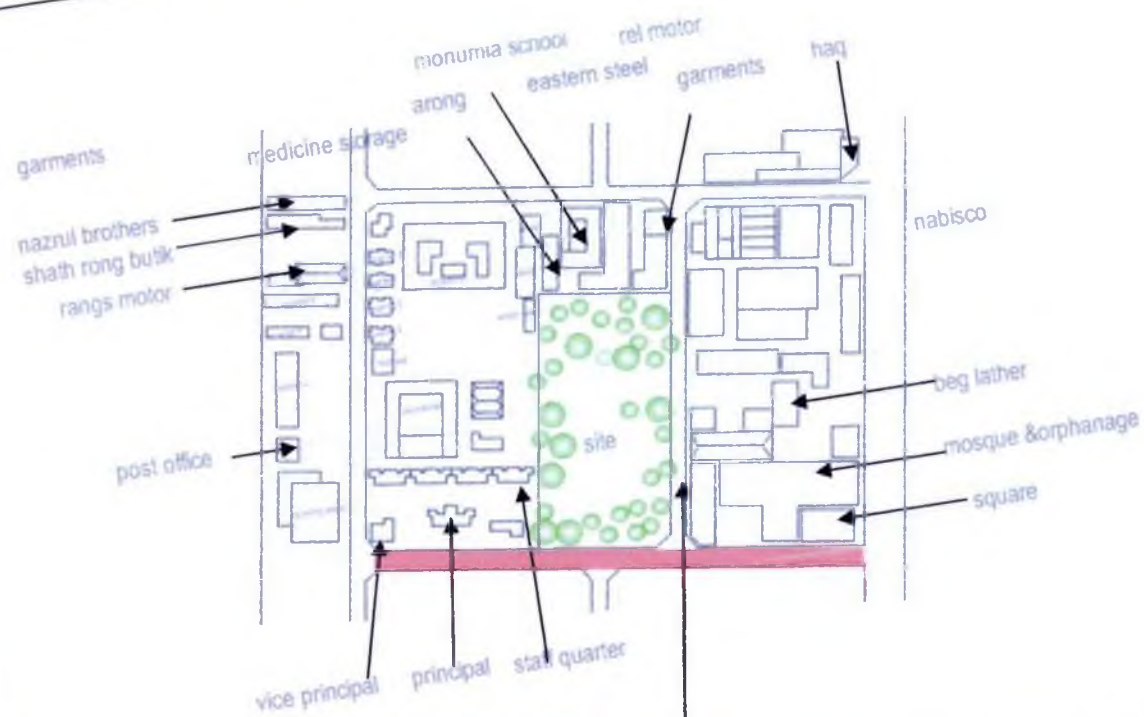


Fig.04.Front side road view



Fig.05.Site Location

2.4 SWOT Analysis

Strength

- Lots of tree in the site
- Low height surroundings structures
- Enough land or space for an institutional project

Weakness

- Adjacent road of the site is narrow
- Road condition is not well
- Absent of nodal point
- huge traffic at night

Opportunity

- Scope for landscaping
- Scope for creating a soothing space for disable children
- Trees act as sound barrier

Threat

- Security is a main problem at night
- Noise will create at night by traffic

CHAPTER 03: Case Study

3.1 Case study 01:

Project Title: Center for Rehabilitation of Paralyzed (CRP)

Site: Mirpur, Dhaka

Architect / Consultant: SHATOTTO



Fig.06.CRP

This center offers the facilities are as bellow:

- Medical diagnostic services and telemedicine, Pathology, Radiology
- Medical consultancy
- Physiotherapy, Occupational therapy
- Childcare services
- Vocational training program
- Canteen
- Cabin facilities

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The special feature of this building has:

- Accessible for all disable people
- Wheelchair access ramp from ground to 5th floor
- In this building includes a liberal dose of natural lighting
- Free spaces with the further inclusion of green areas to promote a relaxed environment for occupants.

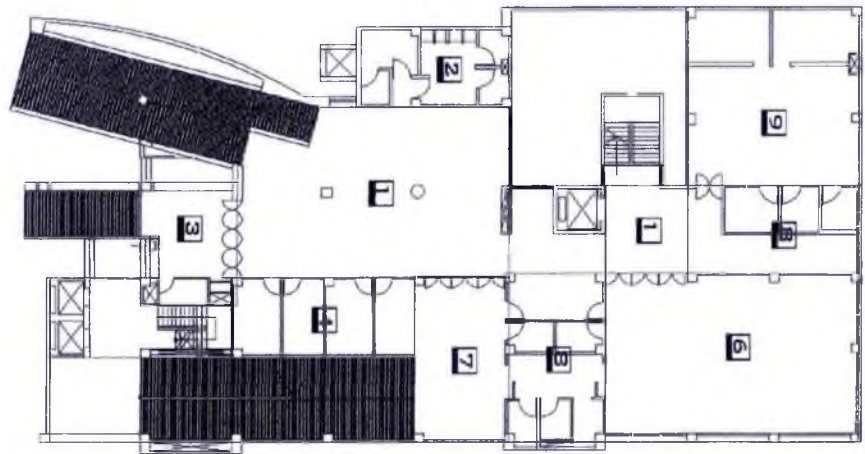


Fig.07.Plan of CRP

1. Lobby and waiting
2. Toilet
3. Reception
4. Consultant
6. Physiotherapy
7. Gym
8. Store
9. Occupational therapy

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Merits and Demerits:

- Lots of terrace make this building part of nature and reduce the hospital effect.
- Lots of open and free space for patient.
- There are zoning problem in function development.
- Though there is function in both sides the double loaded corridor become dark.
- Use of glasses gained very much heat.
- Function is not properly analyzed so that they are not in proper sequence.



Fig.08. Photographs

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3.2 Case study 02:

Project Title: National Center for Special Education (NCSE)

Site: Mirpur, Dhaka

Architect / Consultant: The Designers Collaborative Ltd.

Area: 6.3 acre



Fig.09.google image of NCSE

This campus has:

- 3 schools for the handicapped
- 3 hostels for the handicapped
- Teachers' training and resource department
- Staff quarters
- Residence for Head Sir

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3.3 Case study 03:

Project Title: Disabled Children's Rehabilitation Center

Site: Jeddah, Saudi Arabia

Architect: Zuhair Fayez & Associates

Client: Disabled Children's Rehabilitation Center

Area: 7.85 acre

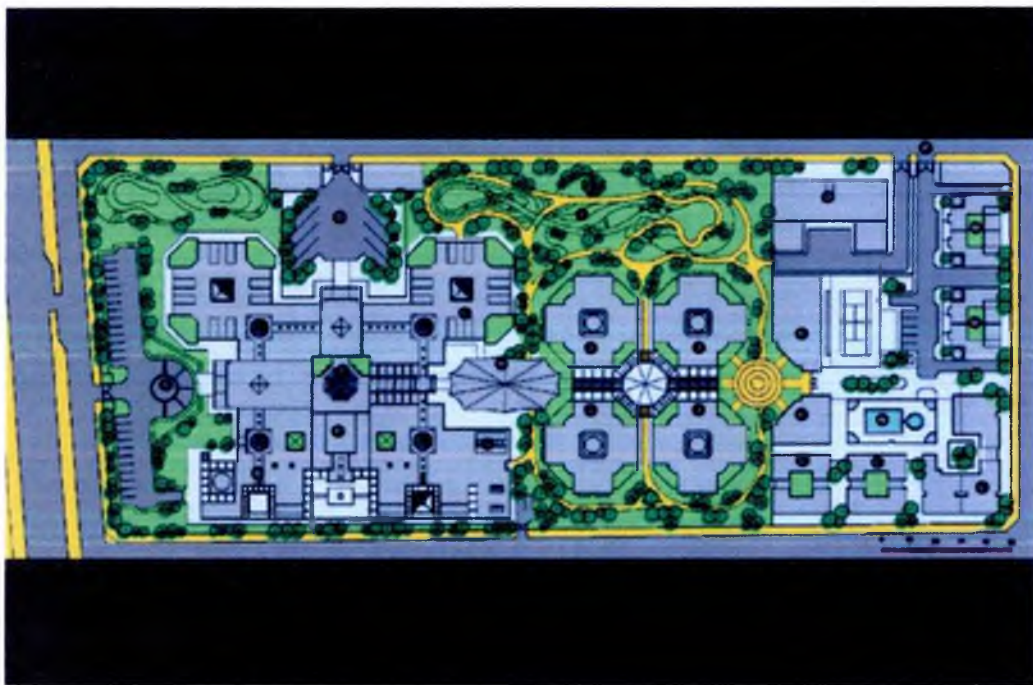
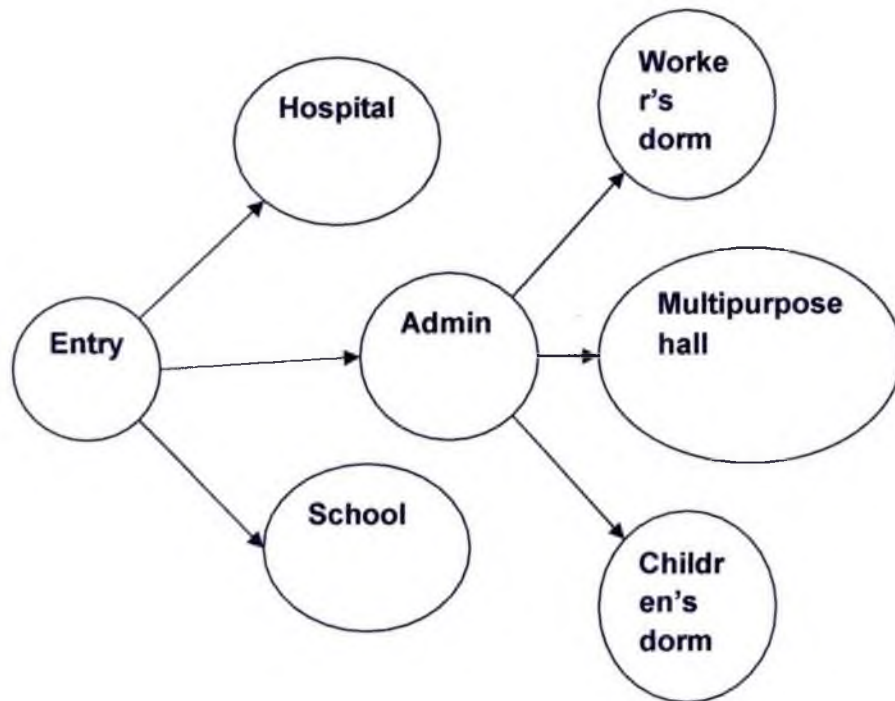


Fig.10.Plan

The center is designed as a village and divided into six main sections: medical, school, rehabilitation, multipurpose, children's housing, worker's housing. These are united by landscape open spaces and series of transitional atria

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Findings:

- The center is designed like a village.
- Related with landscape.
- North south oriented.
- Internal courtyard.
- Sufficient light & air.
- Separated entry for school & hospital.



CHAPTER 04: Description and consideration for different types of disability

4.1 Blindness or Visual Impairment

The terms 'Visually handicapped', 'visually impaired', 'blind'¹ or 'partially sighted'¹ ranges from those who do not see at all to those who may see, but are confused by what they see because of changes or distortions brought about by their visual mechanisms. If a person has some sight, he is "visually impaired" and not "blind", regardless of what and how a child sees, he is much like other children in terms of basic needs and feelings and in general responses to growth processes. He is an 'individual' child, whose visual impairment is one additional difference, one further distinguishing feature that makes him himself. Children who do not see or who see partially, have a different view of their environment from those who are visually oriented and who see well by usual standards.

In USA, the most widely used definition of blindness of "legal blindness" as defined by the Internal Revenue Service for the purpose of determining who is eligible for tax deduction on that basis: Visual acuity for distant vision of 20/200 or less in the better eye with best correction, or widest diameter of visual field subtending an angle of less than 20 degrees. An alternative functional definition is loss of vision sufficient to prevent an individual from supporting himself in an occupation, making him dependent on other persons, agencies, or devices in order to live. The term, "color blindness" is a misnomer since this genetically transmitted disorder is not "blindness" as the term is generally understood and is a minor handicap to only a few people.

Visually impaired children are normally considered to be those who show by their actions and general functioning that they learn more efficiently by ways other than visual or who must implement, supplement, or substitute for their visual learning through touching and listening. From the educational point of view, the blind child is now considered to be the child who learns educationally through Braille and related media with little or no residual vision employed. The partially sighted child is felt to have useful vision for educational purposes, but is limited to the extent that some special educational provisions are necessary.

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The mother who is told her child is "blind" (a term often used when the child possesses a substantial amount of vision) may very well not realize those objects the child could see and should be encouraged to look at visually. Relatively, few children have total blindness that is the absolute inability visually to distinguish from day from night. Those with even the slightest vision can be helped to develop that degree through use and in that way can learn to use what vision they possess with increasing effectiveness. They may evidence poor eye-hand coordination, low ability to pick out and organize details, weak figure-ground discrimination, and faulty visual target-following. The major need of these children is education for effective visual use. If such youngsters receive no visual stimulation and fail to be helped in putting to use what vision they have, their visual ability will deteriorate.

The evaluation of visual behavior is strongly affected by factors such as the child's ability to sit still, to attend, to follow directions, to understand and to use words. There are legally blind children capable of reading print of various sizes.

The physical growth & development:

The children who do not see have a different view of their environment from those who are visually oriented and see well by usual standards. Children who are blind or visually impaired:

- Must be systematically introduced to their world- the people and things around them, even to themselves. Things learned relatively casually through visual means must be consciously taught when vision is limited.
- Must have opportunity to know, understand, and develop their bodies through physical movement and exercise.
- Must be encouraged to use whatever vision they have.
- Must get ideas about other people, how they are reacting, how they are feeling and what they are doing through their voices, rather than from facial expressions, gestures or from eye-to-eye contact.
- Must develop an understanding that there are certain things that may not be touched (clouds, snowflakes, fire).

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- Must be with other people often (adults as well as children) to know them and be known by them and in order to expand their experiences and their personal/social selves.
- Must learn at appropriate times in their development to do things for themselves, just as all children must learn these things.
- Must be taught through the growing, expressed understanding of those around them that they are learning to know the world correctly despite their visual impairments.

Parents and others must develop the abilities: to observe the child, to recognize how he [earns, to evaluate how and what he sees, to note what he does well, and to discover where he needs special aid. The growing knowledge and understanding of the child should be combined with an enriched knowledge of technical and other available aids. Periodical general medical check-ups are a must, along with regular and thorough ophthalmological attention.

The Early Childhood years

Intelligence is not simple inherited, but is developed through the child's living within his environment. It is extremely important for him to be loved in a constructive way, from the time of birth on, and to learn to return love. It is vital that he be given guidance and discipline which allows him just enough choice, but does not leave him on his own when he is not ready for this. He must have many opportunities to move around and exercise and to use all of his 'working senses' in getting to know his world. There is a certain sequence of learning through infancy and childhood which, if followed, enable a child to learn much more than he would otherwise learn. Most importantly, the realization that how a child is received, accepted stimulated and appreciated in his home and how he learns to feel about himself have great influence on how he lives and grows into adulthood.

As a child grows older, there are certain activities: he can be expected to do best in terms of his muscle and bone development, his neurological maturation, his experience, and his emotional and intellectual growth. Children, from infancy, must be encouraged to hear, smell, taste, feel, see and use their muscles in order for them to become increasingly capable in all of these areas. They must move about, be with people and learn to do things.

Talking with children so they learn that words make sense, that words cause and describe actions and reactions and that word help them know themselves and other people is the most important ways of enabling a child to learn and become open to learning more. Most importantly, how quickly a child grows, matures and develops (emotionally, physically, intellectually and tally) is how he continues to feel about himself and his worth as a person. These again d needs on how they think those who are close to them feel about them. This makes it Operative that a child be known in the fullness of his person rather than simply as a child who is visually impaired or blind.

There is a story of a 12 year old boy with no vision who when camping with a group of sighted 12 year olds delighted his huddle by going out in late night in a downpour to let down canvas flaps over windows. They reasoned that he did not have to hold a flashlight in order to see what he was doing. Thus both his hands were free for the necessary work.

Children should learn in directions which allow and encourage them to become independent. If the child is to grow into a healthy and productive human being, he must be helped to gain the tools (skills, knowledge, attitudes) which make this possible, make him feel self-confident and capable of managing his world. It is essential that the child who is visually impaired learn to care for himself personally and to share in household responsibilities even though it takes much effort on his part and on the parts of those around him. If he does not learn to be independent, he will be less of a person because of it and remain a burden on his family from lack of experience.

Visual loss does not necessarily set the limit for an individual's life goals. Although the visual impairment may at first cloud the picture, focusing on the individualities of the child will enable parents and others to set up appropriate expectations for him.

Children need encouragement and increasing challenge to learn, but they must not be overwhelmed.

Children should have opportunities for hearing, touching, seeing, smelling, tasting and feeling through use of their muscles and joints. In this way, the begin to know their world and begin to feel safe in their expectations of that world.

Through play, children learn to try new materials to create and construct, to pretend, to act out some of the important things on their minds and to get along with others.

Physical Growth & Development

Children need to be "shown" and to "learn" the areas where they will spend most of their time. It is important that the child move explore and be curious. More refined "orientation and mobility" can be learned later. The visually impaired child coordinates the gross motor process by hearing. As EAR-HAND COORDINATION (ability to reach or react toward the source of a sound) ripens later than eye-hand coordination, the visually impaired child will experience a different rate of development in certain areas.

- The child must be shown specifically how to move about, to crawl or walk and make use of his muscles. Visually impaired children should be encouraged through numerous and diverse way to lie on front, on back, lift head when lying, on stomach, balance head when sitting, roll over etc. Little noise making objects should be hung above where he will hit them and cause them to sound.

Ear-Hand Co-Ordination: The child must learn to follow sound. Giving encouragement, reason and help to sit, move or react towards a sound. Visually impaired child needs the kind or motivation to reach and grasp, that makes sense to him. Objects should sound and feel worthy of investigating. The ear-hand coordination seldom develops until near the end of the 1s' year.

- As the child moves about, he needs help in becoming aware of hazards: what they what they cause, how to deal with them. He can be taught that some areas are for play and others are not; that the "gate" marks the stairs at which point he must reach for the railing He will learn, but may need to be shown such things a number of times in order to do so.
- Sometimes visually impaired children spend periods of time rocking their bodies back and forth or making certain motions over the over. These "mannerisms" are sometimes mistakenly called "blindisms". But, such mannerisms can be witnessed in any children, resulting from a child's not knowing what else to do.

Personal/Social Growth & Development

Emotionally a blind child is like any other normal child. In thinking of the child's development into a personal/social being, first consideration must be given to his own interest and awareness of himself and secondly, his relationships within his family and his neighborhood or community.

- General interaction of the child is to be done through voice and mannerisms. Holding, embracing, touching will help him feel wanted, enjoyed, needed and loved. Most importantly, talking will increasingly help him to understand and feel a part of the world around him.
- He needs 'active involvement' with the work around him, which he will like doing. He must be told what is happening around him, 'shown' and given time to really "look". He must be given simple tasks to do—to get his own toys, putting them away, set the table, help with the yard work, his own toys, putting them away, set the table, help with the yard work, get around the neighborhood by himself (may need watching crossing streets), go alone or with friend to school or stores.
- Regarding playing, the visually impaired child should be given those toys which are interesting to touch, to muscular feel, to hearing and to smell, as much as to whatever remaining vision he may have. Toys of different texture are more appropriate. He likes to play with sand, mud, water; likes to pour them and later creates with them. A reasonable amount of noise, dirt and messiness must be expected, even desired with the visually impaired child. The child becomes acquainted with toys and certain materials chiefly through the noises they make, how they feel and smell. He plays on solitary level first and does not want to play with other children at first. Through playing, he increasingly interacts with others and become acquainted with their world. The young child like any other normal child singly prefers playing in a group may have special friends, likes to sing, dance or act plays. He likes even to engage in rough and tumble play, like stunts, gymnastics, and physical activities.

Intellectual Growth & Development

Generally, children began to develop a sense of purpose during earliest infancy. This sense of Purpose is akin to the simplest kind of thinking; responding to stimulus as sound, sight, smell, touch, taste, movement. As they become older, the stimulus and response become directed toward abstract as well as concrete experiences. The intellectual growth of children happens through using all their senses, by doing (by watching others), through language, through play (giving chance to act as adults, solving problems, becoming more social through asking questions and investigating), through doing increasingly complicated things in terms of muscle use, emotional involvement, thought processes and with help.

- Language is more important to visually impaired children than normal children. Language takes over vision in organizing thought and experiences. It gives the ability to teach and think with words. Attitudes and conditions must be conveyed by words. The warmth of the expressed language is what the child can feel.
- For children of visual impairment or little sight, books can be made which stimulates interests through color, texture and with real object interesting to touch and understand.
- Games involving touching and naming body parts are excellent. Verbally describing the actions are more helpful to him. Skills having to do with money or telephone can be taught to a child who has good finger control and is aware what these object are and how they are used.
- Blind children may use their mouth to explore objects like most other children. Touching and feeling is a good way to explore things. He can enjoy shapes of objects, the materials they are made of their odor, the sound they make when dropped, whether or not they roll etc.
- Real objects have to have meaning to the blind child over a period of time before the same objects, in replica and miniature, have meaning. He will need many experiences with a Teal car, for example, before the tiny objects held in one hand can be meaningfully called "car".

- Chalk, crayons and paint can be pleasurable and interesting to the blind child too if the emphasis is getting to know the materials and appreciating them through the muscle movement involved, the feel, and the associated smells. Drying paint can be felt. Crayon traces give different feel to the paper and if the drawings are simple enough, it can be recognized by touching.
- The blind children can be learnt to group things and persons in numerous ways, by use, shapes etc.

Special Education for Visually Impaired Children

ADL: It is a program to teach blind children daily activities, where they practice motor-development, ear-hand coordination, along with how to move about and do the basic activities.

When, the children are very small, their activities involve their whole bodies- Gradually they become able to use one, then several body parts. A good example is ball play. This at first involves a scramble of total body activity; later the body movements become more specialized. Children first learn to use large muscles which allow them to reach for and grasp at objects. Eventually they are able to pick up things by means of the whole hand, then fingers, thus using increasingly refined muscle activity. In case of blind children, this becomes more difficult. Children are taught to move around, pick up things, react to sounds etc.

Education courses: The courses are normal like any other school, including Brail system for reading and Abacus for mathematics.

Vocational training: Cane handicrafts, handloom, music, art & sculpture, plaster of paris making, white cane making etc.

Architecture & Physical Environment Orientation

Orientation in the modern community is becoming more and more difficult for people who are blind or with impaired vision. It is important to remember that many things that do not normally create big problems can be difficult and sometimes even dangerous for people with impaired vision. This applies for example, to the unexpected placing of objects and details in the physical environment and wrong planning solutions.

To eliminate the difficulties for someone with impaired vision as far as orientation is concerned the sitting and planning solutions must be simple and easily understood. One should bear in mind the blind person, when choosing furnishings and fitments. For example, one can use contrasting materials and place furniture and fitments so that they do not get in the way. Sufficient information regarding the environment in which one will be moving about is a basic requirement for orientation. Light, used in the right way (for visually impaired persons), simplifies orientation. Color can be of decisive importance in distinguishing different parts of the environments. Finally, sound can make orientation both easier and more difficult.

Sitting

The larger the area one has to move over, the more difficult orientation becomes. Orientation is also more difficult if one frequently has to change direction. One can as early as at the sitting stage in planning process, simplify orientation for visually impaired or blind people. Important and frequently used functions will be easier to find if they are placed **CENTRALLY** to, or in the **NEAR VICINITY** of the areas (room units) which they are intended to serve. To avoid possible confusion, one can also **SEPARATE DIFFERENT UNCTIONS** (for example, goods-entrance and staff-entrance).

Planning and Design

A "good planning should be **SIMPLE**. It should be easily understood also by people with impaired vision. Orientation is easier at plan, pavements, roads and paths keep to a **RIGHT-ANGLED SYSTEM**. It is important that intermediate objectives such as lifts, stairs and .reception desks should be particularly easy to find.

Orientation across open areas is difficult; it is therefore advisable that large areas should be **BROKEN DOWN** into smaller areas, preferably rectangular ones. Areas which are too small, such as narrow corridors and passages, can of course make orientation more difficult since it is easy to collide with other people or objects.

There should be **NO OBSTACLES** on pedestrian circulation routes. Information desks, signs etc. should not be placed in positions where they become obstacles themselves.

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Materials, furnishing, fitments

To BREAK DOWN LARGE AREAS into preferably rectangular ones can be done by the placing of furniture, making sure at the same time, however, that the furniture will not obstruct passage. Large areas can be broken to make orientation easier. It can be broken down also by marking the circulation routes in a different color from the rest of the flooring, or by using materials which give different sound impressions. The softness (spring) of the floor can be for example give directional guidance. Wall-to-wall carpeting eliminates nearly all echoes. Circulation routes can for example be carried out in patterns which clearly separate them from the surrounding floor surfaces. The texture of the walls can also consciously be made to vary. All areas as including staircases should be equipped with handrails to give directional guidance. B t an element of a building, if correctly placed will not for example; afterwards require a fatty rail added to it. FREE HEAD ROOM should never be less than 220 cm. or 7 ft. Signs: awnings, light-fitting etc. must therefore be above this height. For Visually Impaired Persons (People with Poor Eyesight), location of completely GLAZED AREAS—glass doors and large windows- should be carefully considered. In order to prevent people from walking into glazed areas, one should mark them with a colored and which can clearly be seen against the background. The band should be placed between.-140 to 160 cm, (4'-6" to 5') above floor or ground level. The choice of furnishing materials and color should be made with knowledge of their characteristics regarding the REFLECTION FACTOR and MIRRORING EFFECTS. A high mirroring factor in a material often gives negative effects. As an example, a floor can give irritating reflections from lights in the ceiling and cause dazzling, which in turn may impair the vision; a high reflection factor and the use of light colors influence the mean luminance and give light interiors. One should choose a source of light so that colors are reproduced naturally. Materials and colors must be chosen in light .from the source of light which will be used.

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The ACOUSTIC CONDITIONS should be good. One must choose a suitable reverberation time. Sounds should not be too little dampened, as in often the case in public-swimming-baths and entrance halls. They should on the other hand, not be dampened too much as in many conference rooms.

Various CONTROLS, TAPS AND LIGHT SWITCHES should be recognizable to touch and to people with poor eyesight. By using taps which are standardized in design and color, and which are placed in a standard fashion, it will be easier both to find and use them.

DOORS and GATES should be hung so that, they open from a busy area into a less busy one. When open, a door should be against a wall (90° or 180°). Mark off door-handles and the 'push' or 'pull' side of the door by using different colors and materials. Sliding doors are preferable.

Obstacles

For a blind person or a person with impaired or poor vision, an obstacle can be-

- Immobile, such as bicycle stands, flower-boxes, pillars, posts, signs, awnings, balconies and vegetation.
- Mobile, such as doors and windows.
- Temporary, such as vehicles, wiring-off of for example road-works, scaffolding, heaps of snow sand and building materials.
- Obstacles should be placed at the side of pedestrian ways and areas, and they should be so designed that parts of them do not stick out.
- Free head room above pedestrian ways and areas should at no point be under 220 c. or 7 ft. Above floor or ground level.

One should warn or protect against unavoidable obstacles by using varying floor or surfacing materials, or by safety arrangements such as fences or rails.

Deigned obstacles (time-table signs) should be placed in such place so that they will not cause injury to anyone who bumps into them.

Any temporary arrangement to close off pavements etc. should be placed at a safe distance from the obstacle. The actual arrangement should consist of two horizontal wooden spars, which of the upper one should be approx. 90 cm. above the ground. They should be in position both during and after working hours. In winter, snow is a particular problem. It can cause slipping and stumbling and it makes it difficult to recognize normal "guiding features", such as curbs. Snow also dampens sound.

Information

Information can be given in many ways. Verbal information can be imparted directly — at an information desk or indirectly — over a loudspeaker. It is the best alternative for people with impaired vision and should therefore be used as widely as possible. At an information desk, the distance between the mouth of the speaker and the ear of the listener should not be too great.

SOUND SIGNALS (acoustic indication) can also give information such as at lifts, at pedestrian crossings etc. ordinary forms of information should be complemented by sound Signals.

Signs should be placed and designed as to allow one to get close up to them and READ BY TOUCH or by people with impaired vision. RELIEF MAPS of buildings, areas or of any information are most helpful and should be placed at central points, and should also be available on a more reduced scale to hand of people. The call-buttons for door-telephones /should have at least the numbers in relief.

Light

In many situations, one requires better and stronger light than is normal today. People with Impaired vision and with some remnants of vision are dependent upon a better quality of light. This applies also too many elderly people.

The lighting environment is influenced at an early stage in the planning, among other things by the choice between daylight and artificial lighting. Daylight, when low, must be complemented by artificial light. Daylight makes can also causes undesirable mirroring effects. If one uses daylight, the lighting in adjoining areas must also be strong, otherwise the difference in lightness may be so great, that one gets dazzled.

The difference in lightness between two surfaces should not be so great as to tire and irritate the eyes. It is important that light-fittings are correctly placed so as to avoid dazzling effects, direct or by reflection within the field of vision. One-should choose well-shielded fittings which does not take away the desired color contrast.

Color

For people with poor eyesight and people with varying remnants of vision, color is not only important from an emotional or aesthetic point of view, but above all is important in order to make orientation easier. Properly chosen and placed colors make it easier to move around over all areas. The eye is sensitive to color experiences and increases with lightness; Experience of color is at its maximum with orange, yellow and light green colors and decreases towards the red and violet.

In order to make orientation safe, one should separate different surfaces by using contrasting colors in color schemes. Choose colors and interior materials with a knowledge of their

Reflecting and mirroring factors. High reflection factors and light color scheme influence the mean luminance (lightness) and create light interior.

Sound

Sound can have both positive and negative effects on blind people. Sound can make orientation easier, such as, certain continuous sounds from an escalator or a Sound fountain. As an echo from a footstep or a stick, sound has a positive effect and acts as a to other signals (acoustic signals).

Sound has a negative effective when as noise. It distorts or blocks desirable sound. "Noise is mist to the blind". Blind". Wind has both a dampening and a distorting effect. Sources from noise mist screened so that they do not disturb sounds which give directional guidance. If one Harm Pen me sound °f an underground train in a station, then it becomes easier for a n with, bad eyesight to orientate himself by the sound of an escalator, or by using stick-person technique-

Unsuitable acoustics — too much or too little dampening — can make communication between are more difficult or even impossible, particularly for those who can only reify on their sense of hearing.

MATERIALS of pedestrian circulation routes can give a certain amount of information since different materials have different sound characteristics when one walks on them and particularly so when one uses a stick. Certain floor surfaces, such as wall-to-wall carpeting, remove nearly all echoes, thus making orientation more difficult. Optical signals should be complimented by acoustic signals. A loudspeaker, if placed, should give the correct "SOUND PICTURE" and indicate the direction of the person speaking.

4.2 Hearing impaired or deaf

A hearing impaired child is first and foremost a child. This is something we should never forget. We must accept that the child has a disability, but that we can greatly influence the extent to which that disability becomes a handicap. Deaf children generally are 'mute' as without hearing they do not learn to speak. Their vocal cords remain normal.

We live in exciting times; more children than ever before are being successfully educated their normally hearing peers. This is a result of positive and dedicated approach of parents, as well as of developments in technology and educational methods, parents who are worried about their child's hearing should be given the opportunity of a full audio logical assessment at a specialist centre. Effort should be made to help the child, develop speech and language. Rehabilitation can be done by teaching them to 'hear' and speak by 'lip-reading' and giving hearing aids to those having partial hearing problem.

Causes of Deafness in Children

A normally hearing child has a normally functioning, outer, middle and inner ear. Hearing Impairment arises when disease, damage or abnormality occurs in one or more of these parts. If the problem arises somewhere along the conductive pathway e.g. in the outer or middle ear, the resulting deafness is known as a conductive deafness. If the problem arises along the auditory pathway of the inner ear, the resulting deafness is known as sensory-neural or nerve deafness.

Conductive Deafness

This type of deafness is caused by a 'blockage', or abnormal hindrance to vibration and hence to transmission of sound in the outer or middle ear, generally resulting in a partial rather than severe degree of hearing loss. Such losses can and do affect the child's language acquisition and school progress if present for long periods of time. That is possible to cure, or at least substantially remedy, this type of deafness.

Congenital Conductive Deafness:

.Arises in the womb, during the time when the ear is developing. Varieties of abnormalities, such as complete absence of outer ear, presence of the auricle as a remnant, occlusion of the

Ear canal total absence of ossicles. Cause of such abnormalities is not fully known. Usually ear is affected. Treatment, if possible is done when the child is older.

Causes of Conductive deafness after birth (during childhood)

1. Wax: Though rare, it would give rise to slight hearing problem, when it becomes hard and impacted in the ear canal. Treatment is easy.

2. Foreign Bodies: Accidental placement of foreign bodies in the ear by the child itself. The child should be taken to the local hospital immediately, it is unlikely that, unless totally blocking the canal, it would cause significant hearing problem.

3. Middle ear problems- Eustachian tube dysfunction: Eustachian tube ensures constant supply of fresh air into the middle ear space. Eustachian tube blockage may occur due to any infection around the back of the nose or near the top of the throat, such as heavy cold, allergy, inflammation of the throat and nasopharynx, or enlarged adenoids. Thus middle ear effusion occurs as a watery fluid is produced in the middle ear space, severely dampening the ossicular vibrations. In most cases such problems are cured spontaneously without treatment, or with simple medicinal treatments. In other cases, the child might need the ENT surgeon's help in performing a small operation to drain out the fluid from the middle ear and restoring normal Eustachian tube function

Sensory-Neural Deafness

This type of deafness is caused by damage in the cochlea or nerve of hearing leading to the brain centre. It can vary from in degree from mild to total loss of hearing. This type of hearing loss is not amenable to medical treatment and an irreparable damage is done within the neural pathway. It is therefore permanent and must be managed accordingly. For example, it is necessary to fit children with suitable hearing aids if a significant sensory-neural hearing loss exists. Otherwise language acquisition (talking and understanding) will certainly be severely impaired.

Causes of congenital sensory-neural deafness:

1. the Hereditary group, due to genetic factors.

- **Hereditary deafness or familial deafness:** It occurs when a child inherits deafness from its parents. It is possible, that a parent is a carrier of a recessive hearing character in the chromosome, even though he or she has normal hearing (or is heterozygote). In such case, the parent's child may inherit this character, and be sensori-neurally deafened. If the parents carry recessive deaf genes at different loci, then their children will not inherit deafness. However the child inheriting deaf characters from both parents, or a dominant deaf gene from any one parent, will be deafened,
- **Sex-Linked Deafness:** Any one of the sex determining chromosome pair of any one of the parents may carry a sensory-neural deaf character. Any children conceived by this partnership will have one of a possible four chromosome permutations. Whether the boy or the girl will inherit the deaf gene will depend on which sex determining chromosome of the parent carries the deaf gene. It will also depend on the dominance or excessiveness of the deaf gene.

A child can inherit a number of abnormalities or characteristics, grouped together. Such, comparatively easily identifiable multiplicity of abnormalities is generally called syndromes: collections of symptoms that are passed on through families together. One syndrome that is a well-known cause of inherited deafness in children is Warrensburg's Syndrome.

The prenatal group, resulting from damage to the inner ear of the baby as it develops in the womb.

- German measles (Rubella Virus).
- Other Maternal infections, such as cytomegalovirus. ii. The prenatal group, at and around the time of birth,
- Prematurity.
- Anoxia: Soon after a difficult birth, the baby may suffer from oxygen shortage or every cardiac arrest that is prone to hearing impairment.
- Neonatal Jaundice: High levels of bilirubin damages the nerve of hearing at the brain stem.
- Rhesus incompatibility. This problem arises when a Rhesus (-) mother is carrying a Rhesus (+) baby. The anti-Rhesus or anti-D factor in a Rhesus negative mother may result in a severely jaundiced baby.

Acquired Semorio-Nettral Deafness;

- Viral: Acute viral infection, such as Mumps (usually damaging only one ear), Measles (though rare, causes bilateral sensory-neural deafness), Influenza (sudden hearing loss).
- Meningitis: It is an inflammation of the membrane covering the brain. It is probably the most common cause.

Types of Deafness

1. NORMAL (OR MILD) DEAFNESS: hearing loss of 5-10 dB up to 25 dB.
2. MODERATE (OR PARTIAL) DEAFNESS: Hearing loss of about 30-50 dB. Can be developed through hearing aids.
3. PROFOUND (OR TOTAL) DEAFNESS: Cannot hear (or talk) at all, 'Lip reading' and 'sign language' is the only method of communication.

Educational Provision for Hearing Impaired Children

The educational provision for sensory- neutrally hearing impaired children starts with the diagnosis of the child. As far as the child and his language development is concerned, he can be called zero age at that point and then be aged by the length of time since he had his hearing aids. If the child has no, or next to no, stimulation from auditory input, then we cannot expect him to start to talk immediately. Consistent amplification is needed over a considerable period before this can begin.

The services providing support for families of hearing impaired children at home and in normal schools are called ancillary services. Skills of parents are more important than very early placement in special nurseries for the hearing impaired. It is in fact, policy of the British Association of Teachers of the Deaf that, wherever possible, the hearing impaired be placed in local normal nursery schools: provided, that is, that appropriate and adequate support can be given to the nursery school and concurrently to the child and his family. In such cases, the child would need specialized support of the peripatetic (or special) teacher of the deaf.

The child is best stimulated at home by normally talking parents and in a normal school by normally talking children and teachers. It is a sound policy to 'place' the child first in the mutational environment of the home, where the child plays much of the time alone or with mother and she can provide a good speech model in generally quiet acoustic conditions. One-to-one attention is needed also from the mother. A nursery can provide contact for the child with other normal children, of similar age. It will offer opportunities for interaction with other children, encouraging social play and the development of useful skills such as turn-taking and sharing.

Integration of Hearing Impaired Children

The physical integration of hearing impaired children into the normal educational system resulted an increase in numbers placed in normal schools for partially hearing children, during 60s and 70s.

- It is based on the assumption that—hearing impaired children can learn to talk, and they will do it best where the environment is naturally oral and the motivation to achieve good moral standards is high.
- And those normal social relationships develop best if they are started early. We can start hearing impaired children off with normally hearing children for more easily than? Can implant them at a later stage.
- Training for integration by segregation leads to lowered expectations, reduction of opportunities for social contact and ultimately greater difficulty in integration. Thus, separated educationally and given special attention at the early ages will not help them integrate ultimately successfully.

A school age child, if has minor hearing loss, it may not even be detected, but will have a marked impact on the rate of language development at the language learning stage.

Integration should be integrated physically, socially and educationally. Partially hearing units in normal schools where the hearing impaired children spend most of their day with the normally hearing children, only returning to the unit for individual sessions with a specialist teacher. The problem is. There are also units where the children spend their whole day segregated from the normally hearing children, although in the same school. Some even have separate playtimes, so the children do not have a chance even of social contact. Severely and profoundly hearing impaired children need special schooling, but the large majority of hearing impaired children can and should be educated in environments closely approximating to the normal one, in normal schools with the support of the peripatetic teacher, or in partially hearing units in normal schools. One experiment shows, six hearing, impaired children in normal classes were supported by a specialist teacher of the deaf who co-ordinate and provided the speech work, and three Slip port teachers. The children made positive reading and speech gains with this advantageous provision.

A normal school is a normal oral language environment as a matter of course, which the special schools strive to achieve. The normal school is argued as the best training ground for encouraging the hearing impaired child to adjust to life with normally hearing people. His resultant ability to cope in a hearing world is consequently higher.

Factors affecting educational placement:

Degree of Deafness:

Child with very similar audiograms may have very different educational needs. One child may be very severely handicapped by his 80dB hearing loss; another may be progressing very closely along normal lines. Most important is how he is doing in educationally & socially with the loss.

Intelligence:

As the children are almost always linguistically retarded, so intelligence tests presented verbally would be disadvantageous. Psychologists use non-verbal or performance tests Wechsler Intelligence Scale of Children (W.I.S.C)]. The child's intelligence affects his ability to cope with his handicap.

Linguistic development: The child's level of understanding of spoken language and ability to express him verbally is to be known. Rendell Developmental Language Scale with both Comprehension & Expression sub-tests and tests of receptive and expressive vocabulary are commonly used. Social and emotional development: Factors such as the child's level of adjustment, ability share, to accept frustration, to respond appropriate in social situations (e.g. table manners, toilet social skills including dressing etc.) and aspect of his personality, such as his p^a [Hence, competitiveness, self-control and whether he is outgoing or withdrawn etc will have ring on the type of placement most appropriate to his needs.

Use of hearing aids: Assessment of the child's use of hearing aids, his attitude to his aids, as e) I as his ability to perceive speech through them is to be done. Speech tests can be carded out which will indicate the effectiveness of his use of hearing aids.

Classification of Deaf children in school:

For proper education and training, the deaf children can be categorized.

1. The 1st category consists of slightly short hearing children and may also visit the normal schools with careful handling of teachers and help from class mates. These children may need hearing aids.
2. The 2nd category has children who are short of hearing to such an extent that they are unable to visit the normal schools, but are capable to follow a combined lecture ("general lecture" in normal schools), together with sign languages or necessary aids.
3. This category consists of those short-hearing children who are only capable to follow sign languages.
4. This category consists of people who became deaf after they have learnt languages or even after beginning their profession. Their adjustment with the new environmental conditions is mostly psychological and their education is mainly to get acquainted with 'sign languages'.
5. This category is that which has people who are at the same time deaf and blind.

The teacher and the respective selection Board decide in which group the child belongs to and will transfer or promote according to his/her proficiency or deficiency. Vocational training is necessary for the deaf child to be rehabilitated in society. Jobs which require much hearing programmers are not suitable for them. They may be taught any type of assembly work in a factory, painting, photography, tailoring and other works where mental concentration is important than voice communication.

Peripatetic teacher in an integrated ordinary school

The peripatetic (or special) teachers' main role is to support sensori-neurally deaf children in normal school. The main role of such teacher is to monitor educational progress and tutorial, remedial and advisory work. Ordinary class teachers should be made familiar with the skills, learning about the handicap of deafness, the use of aids, limitations of aids of in Noisy conditions and so on.

At the secondary stage, the increasing specialization makes work more complicated. The child have different teachers for each subject, so there should be someone in overall charge of (the hearing impaired children. A specialist teacher should be attached, with a base classroom "or unit, and making his responsibilities to monitor all the hearing impaired children in the school. The peripatetic teachers provide a link between the particular child and the services of doctors, psychologists, social workers, speech therapists and others. They maintain contact with their children until they are settled in jobs.

Educational Curriculum in Special Education Schools (In Bangladesh)

Admission:

"Children admitted to school I have an age limit of 6-10 years. Those children are taken who especially have a chance of development, those who are poor and live far away from the school (given residential accommodation). The percentage of the type of deaf children admitted is: Profound - 60%, Moderate - 20% and Mild - 20%.

Curriculum & teacher-student ratio:

Hearing impaired children have seven classes in total. In the first two preparatory classes, they learn about language development, ADL activities, and other courses which normal children learn. The other five classes have courses like any other normal school-curriculum. Children who are partially deaf are given suitable hearing aids.

NATIONAL COMPLEX FOR DIFFERENTLY ABLED CHILDREN

Teacher-student ratio: Number of teachers per class is very low and the ratio is not appropriate. The necessary ratio of teacher (1:5 in our country), is not maintained due to lack of resources, less number of trained teachers and poor socio-economic conditions. So this ratio is seen to be doubled or tripled in most schools.

Syllabus: No uniform syllabus has yet been framed for the education of deaf children in our country. Different schools follow different syllabuses, lacking in a standard education. The common factors that are followed in most classes are:

- We must use 'lip reading' method in class, but 'sign language' is necessary to make the communication more impressive and lively to the students.
- Start teaching them pronunciation of letters beginning with five vowels.
- Students should learn pronunciation of words beginning with the easiest.
- After learning to read, language learning should begin. The most important is the reduction of parts of speech to three-the noun, including all words which admit gender and number the verb, including all implying variation of person, tense and number and the conjunction, including all words which are always used in the same unaltered form.
- The tenses may be taught in simple past, present and future tense, the meaning of which can be illustrated by days of week, aided by significant signs.

High school education:

1-2% hearing impaired students out of primary schooling are capable of high-school education in Bangladesh. If there are more resources, specialized teachers and more awareness among parents and the society, then the number will definitely increase.

NATIONAL COMPLEX FOR DIFFERENTLY ABLED CHILDREN

Physiotherapy:

There are children admitted who have multiple-handicap. In physiotherapy, the children with motor development problems or physical handicap are given ADL courses (teaching daily activities), exercise through "PLAY THERAPY" to assess and treat physical handicap as well as develop their mental capacity and intelligence. In play therapy, an important exercise is ball-play. This at first involves a scramble of total body activity; later the body movements become more sophisticated. Children first learn to use large muscles that allow them to reach for and grasp at objects. Eventually, they are able to pick up things by means of the whole hand, then fingers, thus using increasingly refined muscle activity. With physical maturity, they become better able to use fewer muscles and to involve just those needed to do a certain task. Children with physical handicap benefit from

Play Therapy

For motor development and better eye-hand coordination. Different toys and exercising-are used for this purpose.

Speech therapy:

Children, who cannot exceed speech problems in class, are given special therapies in a separate room. Speech therapy develops language and vocabulary, benefiting those especially with physical handicap.

Vocational training:

Art or drawing, carpentry, tailoring, gardening etc.

Attendant: student ratio:

This is most important in special educationing of any types of handicapped children. • Attendants should attend children when they are not in class, look after them especially During play or social mixing with other children. Attendant; student ratio is the best when the lowest, some children may need 1: 1 attendance. In Bangladesh (due to economic condition), 1:4 or 1:5 ratio is best if maintained.

NATIONAL COMPLEX FOR DIFFERENTLY ABLED CHILDREN

Assembly:

All hearing impaired children are fit for assembly with any other types of children. Some children need constant attending by an attendant.

Tiffin:

All children are not allowed to go out or play all by themselves. There are multiply handicapped children who need to be attended when eating Tiffin.

Teachers' training programmed:

Establishment of a teachers' training college is necessary to achieve the goal of a systematized education of the deaf. Unfortunately, in third world countries, only a few have such facilities for training a teacher for the deaf. In some cases, socio-economic condition does not help to establish such centers. Government help becomes necessary. There are Foreign countries and organizations (IUNICEF etc.) which give economic help or such co-terminity of training in poor countries.

Architectural considerations:

"SOCIALIZATION: Psychologically, hearing impaired children are most normal compared to other handicapped children. They are like any other normal children, only with a hearing problem. There is no point in discriminating these children as being 'handicapped' from 'other children.

Hearing impaired children can learn to talk, and will do it best where the environment is naturally oral. Then the motivation to achieve good moral standards is high. Normal social relationships develop best if they are started early. Hearing impaired children benefit from working and co-operating with other normal children, depending on the encouragement and teaching style. It has been noticed how normally hearing pupils take steps to see that their hearing impaired classmates keep up with the work. What is even more interesting is to see, as is done, a hearing impaired child helping a normally hearing little boy with his sums. From architectural point of view, a nursery should offer opportunities for interaction with other children, encouraging social play and the development of useful skills such as turn-taking and sharing.

NATIONAL COMPLEX FOR DIFFERENTLY ABLED CHILDREN

The problem is, there are also units where the children spend their whole day segregated from the normally hearing children, although in the same school. Some even have separate playtimes, so the children do not have a chance even of social contact. In that case, it should be noted that there are opportunities for visual contacts with other children, so that they do not feel discriminated or left out.

Acoustics:

Noise levels are a prime consideration for the hearing impaired child. Even though the children with suitable hearing aids should not be disturbed with normal hearing environment, but it is advisable that ordinary schools should have acoustic treatment. Resulting high background noise levels is undesirable from a hearing aid user's point of view.

Noisy normal nursery playing areas should be especially sound treated. The floors should not be hard and bare, and toys should not be of solid wood. All this may be very poor for communication.

Class rooms:

For hearing impaired children, separate classrooms are better than open plan from a noise point of view. However, the teacher in the open plan class may adopt a very individualistic approach to her children, enabling the handicapped child to thrive on this treatment and perhaps get more of it than his 'fair' share. There should be plenty of open space around for the physically or multiple handicapped children to walk around or play, which helps to develop motor-skill.

Tiffin space:

All students are not allowed to go out during Tiffin time as Tiffin is served in class, that being a part of the educational curriculum. Children with multiple handicaps are attended and taught to eat properly, all by themselves. Tiffin spaces should be more social (physically or visually), instead of confining them into the corner of their classrooms.

4.3: Mentally impairment or mentally retardation

Mental retardation is the impairment or shortage in intelligence, slow menial development during growth period, reduced learning ability and problematic social and behavioral adjustment.

Mental retardation is not a disease, but a disability of impermanent nature. The retarded children constitute a very heterogeneous group both in their behavior and cause of their /deficiency. Some arc manageable and happy at home, while the other can be difficult to manage and impossible to supervise at home. Minor handicaps interfere primarily with School achievement. Grossly defective or severe physical or mental handicap will intercept "Physical, intellectual and emotional maturity from adolescent period. In that case, the child not is able even to learn to sit up, talk, play or interact. However, in most cases, the dentally retarded children have normal physical growth. Their attention span is less and learning ability becomes less. Along with less hearing and learning ability, speech also becomes retarded. What he speaks may also be defective because of his inability to discern.

The earlier terms such as idiot, imbecile or moron, to address the mentally handicapped have been, with time, debased into meaningless insults. Mental retardation is now also expressed as manta! Deficiency; mental sub normality; mindedness; mental handicaps or slow learners.

Classification of Mental Retardation

Mentally retarded people can be subdivided into groups according to their severity of intellectual deficit. This system depends on accurate measurement of either level of intelligence (TQ- Intelligence Quotient) or capacity to learn.

- **Profound Retardation:** Individuals under this category have an IQ of usually below 20.
- **Severe Retardation:** This category consists of IQ range of 20-30. That equals to mental age of 2 years of a normal child. Such individuals are also known as 'CUSTODIAL' and require constant care or supervision throughout their lives.
- **Moderate Retardation:** They are also known as TRINABLE MENTALLY RETARDED (TMR)' and have an IQ of 35-50. They have a mental age of 3 to 7 years of normal children. Such individuals can be trained to develop self-protection and limited skills, under close supervision.

The above three categories of retardation can be diagnosed in infancy because of physical malformation, grossly delayed habit training and other obvious symptoms.

- **Mild (or Borderline) Retardation:** They are also known as the 'EDUCABLE MENTALLY RETARDED' and IQ ranges from 50 to 75; or mental age of average 8 to 12 years of normal children. They can be taught reading and writing or do simple arithmetic. But they still need special attention and schooling. Such children cannot be taught after a certain limitation as normal children. Mild retardation usually does not show any physical abnormalities, grossly delayed habit training or other obvious symptoms. They may converse spontaneously and answer to simple questions. In countries such as ours, where the mild retardation gets identified in school, due to lack of awareness and specialization, such retardation normally are identified as 'SLOW LEARNERS'.

Causes of Mental Retardation

The causes of mental retardation in children may be environmental, genetic, infectious or physically traumatic in origin. The factors responsible can be divided into the following categories:

1. Cultural-familial factors: Such retardation is the most common form of retardation and typically occurs in more than one family member. They are 75% of all retarded persons, showing no obvious physical defect. Such retardation is usually identified as MTLTD or BORDERLINE retardation. The relative importance of genetic and environmental factors in this form of retardation has not yet been fully explored.
2. Organic factors: Mental retardation arising from organic damage is easier to recognize and diagnosed than cultural-familial retardation. The most common forms of retardation include: phenyketonuria, mongolism, cretinism cerebral palsy, hydrocephalus and microcephaly. Most of the individuals falling into this category are either MODERATELY or SEVERELY retarded. They account for almost 15% of all mentally retarded individuals.

Children may contract diseases and develop conditions during bio-medical stages, which may cause mental retardation of the child. They are-

- PRENATAL Stage: A mother may get infected during the first three months of pregnancy like German measles, syphilis, malaria, typhoid etc. which affect the brain development of child in the womb.
- NATAL Stage: At the time of birth, use of forceps, complicated child birth or difficult labor pain, bleeding within the skull of the newborn may develop complications.
- POST-NATAL Stage: Injury to brain in accident, sudden hemorrhage, certain unusual disease during infancy and childhood can also cause retardation.

Early Diagnosis of Mental Retardation

It is not possible to diagnose or predict abnormalities or retardation in an infant, unless there is any complication during delivery. But within the first 6 months, the normality or sub-normality of a child can be judged. At the end of 6 months, a normal child is able to do the following activities:

- Lift its head while lying on the back.
- Hold its head there for a short while.
- Enjoys taking bath by movements.
- Tries to crawl.
- Follows a moving light.
- Plays with its hands and fingers.
- Can hold an object with its hands.
- Turn head towards sounds.
- Recognize parents and those coming in contact with it daily.
- Produce various sounds.

Normally a child should be able to stand without support from 9 to 18 months and walk from 10 to 20 months. During 8 months to 5 years, a child should be able to perform the following activities:

Learning to eat and drink:	8 to 14 months with support 14 to 24 months without support
Eating without much spilling:	16 to 26 months
One word:	12 to 21 months
Approximately 10 words:	18 to 27 months
Learning to Dress:	2 to 3 years
Put on shoes:	3 to 4 years
Dress except tying:	4 to 5 years.

Psychological tests for diagnosis, identification and assessment of degree of mental retardation have also been developed. Most widely used tests in this area are Stanford Benet Intelligence Scale and Wechsler Intelligence Scale. These tests have been translated and adopted in several languages all over the world. Psychology Department of Dhaka University has completed and there is standardization of Wechsler Intelligence Scale for children for use in Bangladesh. Another growth and development test used for children from birth to 6 years of age has also been standardized. Both these tests are used regularly in the diagnosis of mental retardation in the "Child Guidance Center" of the Psychiatry Department of Dhaka Medical College Hospital.

Management of the Mentally Retarded

(At home and school)

There is no permanent cure for mental retardation and children do not outgrow their mental retardation as they reach maturity. However, good training and special care does encourage improvement. A majority of the MILDLY retarded can be trained and educated to get some simple employment and earn a livelihood. The other categories may be taught personal cleanliness, elementary self-care and simple socialization behaviors.

Parents' education and family acceptance:

First and foremost, the parents should be educated to accept the child's limitation regarding his mental capacity. It is difficult though, even when they realize that their child is subnormal. They waste valuable years waiting for their child to become normal and spend large amount of money consulting specialists. Parents need to be educated and guided to improve the child's behavior by providing good home training. Normal siblings should be taught and encouraged to accept the subnormal children and care should be taken that other children do not tease them.

The reflection of parents' tension and worries about the problem of the child can be observed in many cases in the undesirable repetitive behavior in the retarded child. The neglected child picks up some undesirable behavior to attract others attention. Instead of punishing them, both the mother and the teacher should handle them with care and avoid that particular moment moreover rewarding when any desirable activity is shown.

Some undesirable behavior is just a natural part of the child's exploration of his environment. The child's energy should be channeled into useful learning experiences and Activities. Children who love handling mud can be guided to make clay models. If the undesirable behavior becomes harmful or a burden, it should be criticized immediately. The child should not be rebuked or told that he is too bad, but he must understand that what he is doing is wrong. So the management of a child varies from child to child and also from time to time. The training should be consistent. Simple house work can be taught such as making bed, cleaning furniture's, cleaning his own toys, growing pot plants, helping mother to do simple house chores, rearing domestic pets such as guinea pig, birds etc. which are harmless to the child and he will also enjoy it thoroughly.

Frequent temper tantrums are sometimes to get attention or learned ways to avoid unpleasant tasks, rather than sign of deep frustration. At that stage, isolation helps. The teacher or the mother should determine whether to isolate or ignore.

Social acceptance:

Society at large should be made aware of the handicaps of the mentally retarded child and provide help and care that they need.

Behavior Modification and Training of the Mentally Retarded

Most of the mentally retarded individuals do not need to be institutionalized. Modern technique of 'BEHAVIOUR MODIFICATION' has been found to be very successful in the education and training of the mild as well as severely retarded persons. The behavior training of the child may be classified as follows:

1. **EARLY TRAINING:** Self care includes eating habits, dressing, personal cleanliness etc.
2. **SOCIALIZATION TRAINING:** Includes behavior modification, play, physical training, music, speech etc.

1. Early training

Learning self-care skills is the first step to the development of independence. If repeated consistently, they become habits, and will increase a retardate's feelings of personal worth and responsibility.

The easiest one should be encouraged first which will goad them into achieving self-confidence. The child starts to grow emotional maturity as well as social adjustment. Some general principles of early training to eat, dress, wash and toilet:

- First step is to know the child from his behavior, his level of development and how he learns best.
- The path of learning should be a pleasant one. The adult's enthusiastic attitude has a wonderful effect upon the retarded child.
- Each skill should be taught and analyzed the simplest way and in stages. Complex tasks should be broken down into small steps of simple tasks, applied in different techniques and study their effectiveness. The easiest part should be taught first.
- The child should be allowed ample time and opportunity to work on a new task.
- The task should be practiced consistently. If a child is expected to put his shoes on one day, he should do so every day.

NATIONAL COMPLEX FOR DIFFERENTLY ABLED CHILDREN

- There should be realistic motivation whenever possible. For example, the child of fastening his shirt to go outdoors to play rather than button it to please the mother or the teacher.
- The child should learn a task in as normal a situation as possible example, the practice of fastening the shoe laces should be liken his own shoes. So it should be tilted toe up, facing away from him, as the wears with his foot on a stool.
- Plenty of reinforcement is needed.
- Complete perfection is not expected at the initial stage of training.
- Sometimes it is better to be flexible. If one method or trial does not work after an adequate trial, the sources of difficulties the child is facing can be discovered. A new approach can be then adopted.

Introducing eating habit to a retarded child:

First step is to divide the whole eating process into several steps.

- Looking at the food plate
- Moving forwards at the food plate.
- Showing eagerness to take food,
- Extending arms towards food.
- Holding food with fingers.
- Putting food in the mouth.
- Swallowing food etc.

Next step is now to analyze where the child stands. If he passes the first few steps then we start from the next. Each step is practiced several times so that the child can learn it thoroughly. Without regarding how much time it takes to learn, the steps should be followed consistently and by the same person dealing with the child. The child should be rewarded (oral or material) when successful. Oral reward is more advisable.

When the mentally retarded child is also physically handicapped, he should be handled with more care. First, he should be seated carefully. The atmosphere should be less distracting for the child so that he can concentrate when taught. A table with perhaps one other child or the teaching assistant or an older pupil

Toilet Training and Readiness:

It is a slow process and will require much patience and perseverance. Toilet utilities have especially built handles that help the child to use it properly. The developments of a new skill, such as toilet training, depend on maturity, in other words the level of development of his nerves and muscles. Training starts when the child starts to take responsibility for his own actions. When a child is held by his mother on the toilet at a very early age that is not really training. As the retarded child mentally age slowly than a normal child and it varies from child to child, the introduction of a new skill depends on his readiness or mental age rather than his chronological age.

Sings of 'Readiness':

- When a child can stay dry for at least an hour.
- When he is (in most cases) at least able to walk.
- When he can indicate the need to go in some direction.
- When he can care whether he is messy or wet.
-

How to tram:

- Take the child to the toilet consistently at certain times of the day; for example, on waking up, after breakfast, mid-morning, after lunch, mid-afternoon, after dinner and at bedtime.
- Make it as a routine and not to ask the child whether he wants to go or not, until he is quite trained,
- Use the same words such as "Time to go to the bathroom," "Pull your pants down" etc.
- Leave him on the toilet with no longer than five minutes.
- Praise for any results. Bribes or threats do not work well.
- Leave diapers off during the day, so that the child can understand when he is wet and needs to change.
- Change wet clothes immediately so that he learns to like being dry.
- Take the wet pants to the toilet and put it in a container there to reinforce the association of voiding wily the bathroom.

- Respond quickly, when the child tries to express his needs or tries to get attention.
- Discontinue training, if the child becomes frightened. Start again gradually and slowly, by increasing the frequency of duration of toileting.
- Relax the procedure, if the child starts to resist the (raining. Take time less frequently and try to find out the reason behind his constant resistance. Is he constantly hearing "no, no"? Is too much expected of him? Does he experience success in anything he does? Better results can be achieved, sometimes by altering situations and taking focus off the training for a while.

Sometimes a child may know exactly what is expected of him and still will not perform. The more irritated or annoyed the teacher or parents get, the more pressure is given on the child, the less will he co-operate. Relaxing time to time or slowing down the process will help him break out the 'vicious circle' and achieve better results.

2. Socialization training

Motor Development of the child:

A child needs to move around freely to find out about oneself and his environment and to socialize better. Development of motor skills in a retarded child is slower than a normal child

And indicates the coordinated movement of body parts successfully. It starts from the head and travels down toward the base of the spine and then outwards to the extremities of the legs, arms and eventually to the fingers.

Retarded children need guided physical activity. For that reason regular exercising relating to motor development is necessary. Such exercise can include simple activities, general body movements or play. There are children with gross motor defects and are to be dealt by specialists.

In cases of poor finger co-ordination, the child may be helped in holding two fingers up straight and engage in some finger lay activities, such as coloring, putting, beads into a string etc. A child with poor leg co-ordination can be given a big round ball to kick, play or balance on. Playing with a large ball includes walking towards the ball, balancing it with the feet, kicking etc. General body movements can be done by introducing activities which includes bending, walking easily, climbing, pulling, pushing etc. Later comes the hand-eye activities. Straw sucking can help children with continuous flow of saliva. A little honey put around the lips can make the child try to like the taste. By such process, the child can experience the feeling of dry mouth as satisfactory.

Play:

'Play is a child's life and the means by which he comes to understand the world he lives in.

DR. SUSAN ISAACS

Given a chance, children play from early morning until they fall asleep at night. They are growing faster and learning more than at any other stage of life. This early experience, physical, intellectual, emotional and social, contributes significantly to health and happiness of the child and adult.

Play is important for a child's motor development through handling and manipulating materials, observing and acquiring new skills. Youngsters when quite small, indulge in That involves their whole bodies. Gradually, they become able to use one, then several body parts. A good example is ball play. This at first, involve a scramble of total body activity; later the body movements become more sophisticated. Children first learn to use large muscles that allow them to reach for and grasp at objects. Eventually, then are able to pick up things by means of the whole hand, then fingers, thus using increasingly refined muscle activity. With physical maturity, they become better able to use fewer muscles and to evolve just those needed to do a certain task. Children with physical handicap benefit from PLAY THERAPY for motor development and better eye-hand coordination. Play is means of self expression, path of imagination where they imitate, experiment and invent. A child expresses emotions by his choice of toys or mode of play.

Such as talking to dolls or coloring etc. This should be observed and interpreted carefully, there are "Adventure Playgrounds" (discussed in a later chapter), designed for children with mental, physical and emotional disabilities, including those of vision, hearing and perception, varying degrees of mental sub normality, emotional and behavior disorders, autism and a great variety of physical handicaps. The chief aim is to provide opportunities for various motor activities: things to scramble through, climb, swing, walk, balance or run along. Itnphasis is placed on less formal equipment that offers a wider variety of experience and gives a great spur to their imagination.

The simple equipments, although very flexible, such as sand, running water and enough Welcoming open and closed spaces make a child feel secure and can build his confidence and | sense of adventure from the 'grass roots'.

Lack of concentration power is the problem of children—classified as Educationally Sub-Normal. Slowly relationships have been established so that a child may want to stop moving Normal yet aimlessly and listen, see and experience new and possibly constructive happenings. Gradually these children begin to settle down and learn from, as well as enjoy the playground environment.

Role of Adults in play:

P16 play should be a co-operative effort, involving teachers and parents. They should understand and enjoy playing with children and their role varies according to each child's need. Some children only look for reassurance, while the others look for involvement and Import. The adult may take role in the imaginative play, become a mirror for the child or Supplement his activity to promote a new reaction. The adult must also be a judge and withdraw when necessary.

In some cases, very difficult tasks supported by the availability of enough raw materials to help achieve such tasks, and understanding seniors willing to help and advice when necessary. Some forms of "free play" are very important for the development of a handicapped child. Many children, because of prolonged individual attention in hospital, over-protective parents, 'special' schooling, can become rather selfish and domineering. One of the main aims of the playground is to make the children socially more aware of each other. Although 'group play' is desirable, a child should also play alone to think independently.

Children who do not play:

There are children who just sit, not motivated or encouraged enough to play, such as the rockers, the chronic television watchers etc., who have never been challenged or never received pleasure from various forms of play. But, almost all children, no matter how retarded he is, can do something with a ball. Simple touching or following it rolls with his eyes might be a stimulus to crawl after it, then to pick it up and throw it.

Different types of play: Pictures:

Looking at pictures can be very interesting to a child. These pictures should be kept in a folder, each containing 10 pictures of the same character but different in kinds, such as pictures of animals, flowers, food items, transport. Looking at the pictures increases the child's attention span and he can start identifying pictures. Beads: Beads keep the children active. Attractive in color and neither very small, nor big and with beautiful (and durable) strings, playing with beads increase the child's hand-eye coordination and also attention.

Sorting and other types:

Children like to sort things of different shape and color. Such as collecting stamps, empty cigarette boxes, empty ice-cream cups, small pieces of clothes to make dress for dolls etc. Such things should be provided by the adults. By possession of something, they feel responsible. There are other simple playthings such as water play, clay modeling sand play that motivate the child and develop motor skills.

Music:

Children, whether retarded or normal, are fond of music. Music relaxes them. A child who is unaware of the surrounding may start rocking with music and through proper stimulation may gradually begin to notice the music and become aware of how he can respond to it. Eventually with encouragement, he may respond not only by rocking but clapping, jumping or beating a drum. Responding to music does not give the child any feeling of failure, however, it gives him confidence that he badly needs in doing something. Music should be selected carefully and accordingly. Music should be selected carefully and accordingly.

Effectiveness of music:

- Music brings the children together and teaches to behave in a group.
- Learning various things can be associated with music. Through nursery rhymes or singing games, they can learn and show interest in numbers, counting, parts of body, name, sounds of different animals etc.
- Music calms a hyperactive child while stimulates a withdrawn child to respond. An angry or repressed child can express his feelings by banging a drum or stamping his feet.
- Music helps the child develop sensory-motor activities. It helps him to socialize when he takes part in group music. Music effects upon emotions, helps to soothe, create a mood or attitude conducive to better functioning and learning.
- The repetition and order in music and musical experience may provide the needed security to better functioning and learning.
- The repetition and order in music and musical experience may provide the needed security for some pupils. Care must be taken in the selection of music.

Selection of music:

Selected songs and music should be understood by the children so that they can communicate with it. Children will attempt to participate in the finger plays and action songs. An object model or picture of the thing about which the children are singing should be brought into play.

- Simple songs should be selected, where the words are easy to pronounce and sentences short. The accompaniment should be simple.
- Familiar or natural sounding. The vocabulary and sentence forms should be those in common usage and arranged in a natural way of speaking.
- The singer should be singing clearly and articulate distinctively. Records and tapes should have good reproduction.
- The song should be slow in tempo if the children are to sing along it.
- Song should be interesting, stimulating, melodious and rhythmic. Unless used for quiet relaxation, the song can be interesting and stimulating, but not too exciting.
- There can be songs which are educational.
- Songs should meet a wide range of needs, in language and musical ability. It is advisable to use songs that have a couple of different words and tones and one or two interesting phrases.
- The music should be appealing to the children.

Introducing Musical Instrument:

One or two musical instruments, that especially fits ones particular needs can be kept in the play room in a distant corner. The adult can play the instrument when the music begins and stop when the music stops. Then he should allow the child beside him to play the instrument. The process should be slow, and kept for the next day if the child is not interested. The adult should encourage the child to play and hold it when playing. Gradually, the child will start enjoying the instrument on his own. The whole training process might take a few days, weeks or even months varying from child to child.

Language Development:

A child exercises its vocal cords, lips, jaws and tongue in preparation of speech from its birth. Speech is the oral mode of communication. Crying sucking, whispering, grunting, sighing, gurgling are the exercises of the vocal cord.

Imitation is the most important step in learning to speak. The child learns to imitate sounds and actions of parents and produce babbling noises (ba-ba-da-da). Speeches develop step by step. A retarded child develops language in the same way but much slowly than a normal child.

Ways should be followed for language development of the retarded child.

Vocational training:

To explore, invent and use imagination and also for the development of motor skills, different craft activities can be taught to the retarded child. Such craft activities make the child use their creative interest to make something beautiful or useful which gives them a sense of responsibility, usefulness, self confidence and also help them earn a livelihood.

The craft activity chosen for the child should be simpler, according to his handicap and it should help to develop his muscle skills. The craft activity given to the child should be of his interest. For example, making cards or Eid presents for relatives and friends will motivate him, leading to increase his general manipulative ability, perception or his special skills, and also will increase his sense of worth.

Craft activities should be challenging. And simpler tasks should be given first, followed by a little hard after he has successfully accomplished his job. Such as, when the child learns to string big beads easily or cut paper into strips, he should try something more difficult or original that challenges him.

A craft activity should provide opportunities for self-expression. The crafts should involve as concomitant learning's as possible. For example, a child may skill in learning to count number of beads of a certain color and certain size as he strings them to match a bead pattern. There are many activities that can be introduced to the retarded children at home as well as in school. Such as, sewing, paper work, wood work, jute work, pottery, book binding, cane work etc.

Introduction of the process of one activity (sewing):

- **Bead Stringing:** Beads of different size and colors should be introduced first, with the strings.
- **Overcast lacing:** A piece of cardboard approximately 3x6 inch in size with eight holes punched in it is used. For lacing, round shoelaces with tip is used, other end of the lace being knotted? It is advised to make a big object, involving much lacing, in order to practice and to learn how to work independently.
- **Running stitch:** This can be done in a sewing card. Run stitches around edge of a smaller card, in which holes are placed closer together and nearer the edge. If it is confusing to know where needle is to be inserted, teacher can mark a line from hole to hole where thread should go, on each side of the card. Later sew around square cards without guide marks. Gradually hemming, sewing buttons, weaving, braiding, knitting and machine sewing may be introduced step by step and also according to the potentiality of the individual child.

Sheltered Workshop

In the training of the retarded children the term 'sheltered workshop' is used. It is where an individual tries out different kinds of work in a protected environment closely supervised by someone skilled in work operations for retardates. The child receives work evaluation and counseling along with reinforcements probably with some remuneration, the amount of which depends upon his productivity. The most competent, best adjusted worker may be moved to a more demanding workshop where he can be trained for possible placement in private industry. In Bangladesh, such sheltered workshop for the retardates has yet to be established.

Educational curriculum in special education schools (in Bangladesh)

In the special education schools in Bangladesh, the mentally retarded children are given motor-development exercises and have more vocationally oriented curriculum in secondary modern and technical schools. Children identified as requiring special provision tended to receive training rather than an education, the aim being to give them access to employment and to enable them to become productive members of society.

Admission;

The children taken care of mild, moderate and severe retardation. Usually, the mild group consist the maximum number of children.

Sometimes the severely retarded children have multiple handicaps (epilepsy, spastic etc.). The children are diagnosed and those who can be treated to at least mild form of training or education are taken as students. The maximum limit of age taken is 12 and the course is of 7 years.

Curriculum & teacher-student ratio:

The children are mainly taken in five groups according to their biological age. The age groups are:

Class A -	below 7-8 yrs. Mild, moderate severely handicapped	
Class B -	8-9 yrs.	All groups.
Class C -	8-9 yrs.	All groups.
Class D -	8-9 yrs.	All groups.
Class E -	above 10 yrs. Consisting of only mildly retarded, Capable of academic education. I	

The goal of all groups is to reach the mental level and intellectual maturity of CLASS E or upgrading them to the level of mildly retarded group, who (though in very small number) gain the intellectual level of a normal 12 year old child. Those who cannot reach that level or be trained educationally are given vocational training to get independent enough to earn a livelihood. All students, specialty the severely retarded children are given therapies for development of physical handicap. For a severely handicapped student, development of motor skills can be the ultimate for them to achieve.

The teacher-student ratio depends on the type of retarded children in class. Some students need one on one basis of education (severe), while the others do not. In abroad, the schools even have a ratio of 1:1. But, due to lack of resources, it is not possible in Bangladesh. A decent ratio of at least 1:5 should be maintained.

High school education:

Cases of mentally retarded children getting high school education is till now nil. But, with developed education system, resources, specialized teachers and increased awareness of society (especially parents), situations can be improved.

Physiotherapy:

In physiotherapy, the children with motor development problems or physical handicap are given ADL courses (teaching daily activities), exercise through "PLAY THERAPY" to assess and treat physical handicap as well as develop their mental capacity and intelligence. In play therapy, an important exercise is ball-play. This at first involves a scramble of total body activity; later the body movements become more sophisticated. Children first learn to use large muscles that allow them to reach for and grasp at objects. Eventually, they are able to pick up things by means of the whole hand, then fingers, thus using increasingly refined: muscle activity. With physical maturity, they become better able to use fewer muscles and to involve just those needed to do a certain task. Children with physical handicap benefit from PLAY THERAPY for motor development and better eye-hand coordination.

Speech therapy:

Develops language and vocabulary, benefiting those with physical handicap

Vocational training:

Art, drawing pictures, music, bamboo works, needle works, cooking, gardening etc.

Assembly:

Only the mildly retarded children are allowed to attend assembly with other groups of children.

Architectural considerations:

Socialization:

For all types of mentally retarded children, socialization and group-mixing is extremely important with all other groups of children and Architecture can contribute and encourage opportunities for social mixing and interaction. Even though, the children who are moderately or severely retarded should be under strict observation and associated try 'attendants all the time, the community spaces should be warm, open and encourage students pot mix or interact with one another. Visual contact or communication can be helpful for those: children, who are not allowed to mix with others without being strictly watched over.

Class rooms & play spaces:

Mentally retarded children do not have usual educational curriculum like other type of, children. So, they do not necessarily need normal, conventional class rooms. They need to do [plenty of group works (1:1 up to 1:6 teacher-student ratio), table works, as well as need plenty of open space for physical exercise. Physical exercise is the most important part in their curriculum and architecture should encourage ample and suitable spaces for different sorts of plays and exercises. Open spaces for such activities can be an integral part of normal class room.

Tiffin:

All students are not allowed to go out during Tiffin time and Tiffin is served in class, that being a part of the educational curriculum. Children with physical handicap are attended and taught to eat properly, all by themselves. Tiffin spaces should be more social, instead of confining them into the corner of classrooms.

Time-out spaces:

Even though, the students are selectively admitted so that they are not the violent type, but there may be incidents when any severely retarded student gets excited or violent and has to be calmed down or controlled. Class rooms should have corners (Time-out spaces) where such students can be rested for a couple of minutes, away from others, until their excitement subsides.

At all stages of their development, children are imitative animals. But over and above this, they are part of the society of man. They do nothing adult society does not do: they build demolish and build again; they dig and tunnel, fish and explore; they admire the latest car on. The road or pram on the street; they shop and cook, sew, paint and act. They are forever participating in the cultural traditions of their own communities. JOE BENJAMIN

Children are gluttons for life and have a need for all the various experiences which play can offer. Play has something to do with attacking life in an unconventional manner.

Children, all over the world, have a deep urge to experiment with earth, fire, water and timber. They need to be masters of the materials they hand and free to move them around to suit their own desires and to create their own order out of seeming chaos. They delight to work with real tools, to use them in their own way, at their own pace without critics or censure.

4.4 Characteristics of playground for differently baled children

Adventure Playground: A Component of a Play Park

'There is always a certain risk in being alive, and if you are more alive there is more risk.'

IBSEN

Children's play is not only movement, action and noisy behavior. It can as well consist of daydreams, lying in the grass pondering the shapes of clouds—Idleness or doing nothing. Trees, animals, birds, people, things and machines can all be subjects for the child's imagination. A buzzing bee, a butterfly, the waving of the tall grass, a leaf falling— all can satisfy a playful wonderment. Through observation, the child gathers material for play— watching, he gathers impressions to convert into play. When things are happening, the child can be surprisingly patient and absorbed onlooker.

The children work out their emotional problems, using the space and unstructured materials to come to terms with their feelings within the secure and sympathetic frame work provided by the staff. Research shows, these children, with emotional problems, built their day dreams in rubble and dust and began to solve some of those difficulties of which the staffs were so acutely aware of. Children 'play-out' events in their lives and feel better for doing soothe interplay between child and adult in play experiments—the warm atmosphere, where the adult uses all available aids to meet the child's need for development in play—are the fertile soil of play itself. No theoretical knowledge, no psychological theory, is worth anything in relation, no psychological theory, is worth anything in relation to play, if it is not part of a personality which clearly shows a fondness for children and their way of living— playing while living. Children enjoy playing alongside each other long before they can play cooperatively. They have a limited idea of the meaning of time— past and future count for little, but the present is full of urgent demands. Children are great explorers. This is a part of growing up. But, it is hard to say that the world around them does much to help this vital process. The poor quality of playfields in average housing areas in any country, containing a sandbox or even some pieces of play equipment do not offer much to these child explorers. A few hundred explorers, testing themselves and everything, can place an enormous strain on an environment that is not designed for it.

The frustration generated by a barren and unyielding environment during childhood and adolescence is far more serious matter and may lead eventually to juvenile delinquency, Aggression, alienation, drug taking etc. The answer to creating an environment that meets the child's urge to explore, test and experiment was given by Danish landscape architect and professor, Cuthbert Steen, in the '30s, as the 'ADVENTURE PLAYGROUND'.

Adventure playgrounds are revolutionary experiment for absorbing the interest and releasing the energies of young people. The children's love for freedom to take calculated risks, their own exhilarating sense of independence and adventure is recognized and welcomed in adventure playgrounds. Adventure playgrounds are places where they can test themselves against new challenges in complete freedom and learn to come to terms with the responsibilities of freedom. The sterile boring playgrounds of mechanical equipments are increasingly being discredited because they so swiftly crush the wonderful gift of inventiveness and discredited. The demand for adventure playground is rising rapidly.

The physical and Psychical Environment:

Play is a child's life and the means by which he comes to understand the world he lives in'.

DR. SUSAN ISAACS

The physical intellectual, emotional and social experiences contribute significantly to health and happiness of the child and adult. Adventure playgrounds are not to be hidden away in the back areas. 'Hide-outs' fail from the outset. Children belong in our midst and their natural ways of playing should be accepted. A pro-child physical environment also needs a pro-play psychical background to use the possibilities afforded in a positive and appropriate way. The facilities for play must be accompanied by an appropriate psychological environment and a positive attitude towards the whole concept of play.

When children are given the right opportunities and the right atmosphere to play, it is starting to see the initiative they show and the happiness they radiate. There can be no doubt, that in case of so-called 'difficult children', free play presents a solution to a lot of their problems.

Characteristics of Adventure Playground

Children make full use of what the playground has to offer, literally discovering space as they ran around, climbing, digging, swinging, splashing in the water, making mud pies and building in the sand. The 'messy play' that its requires can be found in the no other place, but the 'Adventure Playground'. It is joyful to those children who are adversely affected by the high standards of behavior and cleanliness expected of them or who are scared of getting dirty and become inhibited in all their actions.

Building and digging fascinate the boys and girls. It is usually the boys who master the actual construction of the huts and the girls demonstrate their ability in decoration. The climbing constructions built by children show their ability in decoration. The climbing constructions built by children show their natural agility and enhance their self-confidence. As professor Erik Erikson says, 'Climbing adds unused dimensions to the awareness of our bodies, Play here gives a sense of divine leeway of excess space.'

In open sheds, children amuse themselves with drawing, painting and working in clay. These small works of art, give great insight into the mind of the child and his various conflicts. In Eardrop, outside Copenhagen, German, such Junk Arts of various large pieces of sculpture out of all kinds of old rubbish, such as scrap timber and other rejected material, has even find its way into the Children's Exhibition of the Museum for Industrial Art. The children love the clatter-clatter of hitting cans with balls. They can much more familiar with the various materials, and thus be able to express themselves with greater freedom. On one occasion, a small survey showed that playing with sand and water, uses of raw materials and climbing constructions was popular occupation. Conventional toys were near the bottom of the priority list.

Provision for animals: Rabbits, pigeons, guinea pigs and goats etc. encourage children to care for them responsibly and this adds to the enjoyment and to their understanding of living creatures,

Gardens can also flourish on the playground. Plots can be provided, and flowers and vegetables are grown, and watering and digging are part of the fun.

Adventure playground should include the following:

- an endless supply of wood, tools, nails and other junk materials;
- paint, paper, material for dressmaking, glue, books, magazines;
- balls, boxes, tire, tins for cooking;
- large sand pit, with some form of water splash or cascade and other games;
- accommodation for bad weather and an office for the supervisor;
- A 'Playroom' with their own table, chair, cupboards, shelves and floor area to play. Their own paintings, pictures and other handiworks and exhibits can be displayed here. Equipment will include a selection of well-made toys;
- A cloakroom, with low toilets and wash basin, with hanging rails or pegs; An ample storage space for tools and other stuff;

Experiences show that it is not enough to provide materials and opportunity for work and play

For children. A qualified supervisor or play leader should be there to prevent the worst misuse of hammer, saw and nails, but also to suggest ideas and to influence the behavior of children and adolescents in such a way that each child is able to develop his talents; weaker and smaller children must be defended from those larger and stronger, and adequate help is needed for older of work will depend on the sympathetic understanding of the staff. Research in England showed that the number of aggressive acts by children on supervised playgrounds has been considerably less than on unsupervised ones, or even on grounds which children visited their mothers.

Adventure Playground for Handicapped Children

Research show, that playgrounds for the handicapped children can be no different from others, as everything was allowed to evolve on a relatively small scale. There are Adventure Playgrounds in England, designed for children with mental, physical and emotional disabilities, including those of vision, hearing and perception, varying degrees of mental sub normality, emotional and behavior disorders, autism and a great variety of physical handicaps.

The children, who lack in self-confidence and are timid, have time to adjust to the rather permissive environment and do not feel overwhelmed by the challenging nature of their surroundings.

The simple equipments, although very flexible, such as sand, running water and enough welcome open and closed spaces make a child feel secure and can build his confidence and sense of adventure from the 'grass roots'. Some forms of 'free play' is very important for the development of a handicapped child. Many children, because of prolonged individual attention in hospital, over-protective parents, 'special' schooling, can become rather selfish and domineering. One of the main aims of the playground is to make the children socially more aware of each other.

These children need an adult in constant attendance to reassure them. Later on, these children become totally independent of adults and only require them in an advisory or utilitarian among many examples, some of it can be mentioned as follows that have been witnessed at the ADVENTURE PLAYGROUND FOR HANDICAPPED CHILDREN, AT CHELSEA, LONDON. Most of the physically handicapped children visiting the playground varied, from the very immobile child suffering from severe spine bifida, to a child whose mobility may not be impaired but who suffers from epilepsy or hemophilia.

One example is G. (11 yrs.) who suffers from spastic diplegia and walks with the aid of two sticks, highly intelligent and inquisitive, needed a helping hand wherever he went. One day, with the help of one supervisor, being too thrilled, he devised a method to walk the plank across the pond like two, more able, boys. With his sticks at their full height, so that they could still support him when crossing the deepest part of the pond, he could walk across unaided. This was a turning point for him and since then nothing has been insurmountable for him. He even climbed the 13 foot look-tower and hoisted his own sticks up on the pulley. B, (8 yrs.) is a child, suffering from severe asthetosis, who has always been very listless. With great difficulty with his head control, communication with other children was almost nil. In a continuing atmosphere of happy and free play—burying his legs in the sand, putting him in a boat on the pond, climbing up towers and going down slides with him, almost forced him to look up and take notice.

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DEAF CHILDREN are usually the most imaginative and constructive in their play. The boys, enjoyed loading the large garden tools into the strong trucks, going off into hidden depths of the garden, happily spending hours clearing bushes, digging holes, casting earth, etc., with no sign of an adult. The speech of the deaf children improved greatly as a result of wanting to express their interest and delight, verbally. Their shared experiences have been exciting enough for them. One class even learned to say the days of the week because Thursday was playground day.

One of the most perceptive groups at the playground is the PARTIALLY-SIGHTED CHILDREN, who seemed determined to compensate for their acknowledged lack of sight by investigating everything thoroughly.

Lack of concentration power is the problem of another majority group of visiting children—those classified as EDUCATIONALLY SUB-NORMAL. Slowly relationships have been established so that a child may want to stop moving rapidly yet aimlessly and listen, see and experience new and possibly constructive happenings.

Gradually these children begin to settle down and learn from, as well as enjoy the playground environment. There was this group of children, who became so overwhelmed that they found the transition from playground to school atmosphere almost impossibly to make. They benefited most from the simple experiences gained at the playground. Many handicapped children, like many normal children, have minor inhibitions, such as fear of water, animals, mud etc., but because of their rather sheltered existence, these inhibitions tend to become exaggerated. A playground can help in this case, as it did to J. (6 yrs.) DEAF AND SLIGHTLY AUTISTIC child, who had a fear of undressing, even to the extent of refusing to take off her shoes for Gym. Gradually, at the playground, this inhibition was lost when one day she took off her shoes whilst playing in the sandlot because they were uncomfortable. By the time summer came, she quite happily followed her friends into bathing in the nude, having not been cooed or pressurized into any of these 'changes'. Now she is prepared to 'strip-off for the School Medical Officer without much fuss.

Motivating the more SEVERELY PHYSICALLY HANDICAPPED, to move around independently of adults and indicate more precisely their needs and preferences has been a great problem. But, with the help of adequate vehicles, when they do become mobile, their joy is wonderful.

The playground with so much flexible things witnesses the children being generous enough, rarely to have fights and squabbles which arise frequently during a school half-hour playtime break. Also a child's vocabulary is appreciably enlarged and the meaning of words becomes truly appreciated such as 'fast' and 'slow', if experienced when playing with a vehicle on the sloping path. Such simple experiences (but still very adventure some) are very limited in a home or school environment, from which they often derive the greatest pleasure. So 'NORMAL' has been the responses of most children in such adventure some atmosphere, that it can be strongly SUGGESTED THAT DESIGNING A PLAY AREA OF ANY DESCRIPTION FOR HANDICAPPED CHILDREN, THEIR DISABILITY SHOULD NOT BE A DECISIVE FACTOR. There should be some possible addition of a few relevant aids such as hand-rails, large toilet facilities, imaginative walking-aids, and possibly more adult supervision.

The enthusiasm and enjoyment generated by the children keeps our spirit of adventure alive and flourishing and also confirms the absolute need for many more similar play facilities for handicapped children throughout the world.

CHAPTER 05: Programme and Development

The main objective of this project is to create a space for differently able children where they can get every facility which they need. There will be educational facilities, health facilities, medical facilities, laboratory, workshop, Social & cultural center, consulting center etc. Through this project a differently able children can feel that they are part of our society. They can have every facility, every scope, and every dream which these people have.

The complex main functional facilities are:

- Foundation and administrative building
- Therapy and hospital complex
- Library and resource
- School complex
- Multipurpose hall & workshop

5.1 Foundation and administrative building:

This is the main administrative area for the complex. This administrative area will serve all the information about hospital, school, and rehabilitation center. Any kind of query or admin facility will be controlled by the function and administrative building.

1. Lobby-Lounge	600 sft
2. Reception	150 sft
3. Hand wash & toilet	200 sft
4. Information center	
I. Education & research	100 sft
II. Health facility	100 sft
III. Legal facility	100 sft
5. Executive block office	
I. Director's room	400 sft
II. General secretary	300 sft
III. Trustee members room	200 sft
6. Assistant director with toilet	200 sft
7. Disability information officer	200 sft
8. Social adjustment officer	200 sft
9. Official staff (2 person)	400 sft
10. Clerks (2 person)	300 sft
11. Conference room	500 sft

TOTAL = 4000 sft

5.2 Training & Research center

This training and research center will give special education and course which is related with physiotherapy. This course is basically arranged for the teachers, parents, social workers, health workers and for hospital.

1. Lobby-Lounge	500 sft
2. Class room	6000 sft
3. Hand wash & toilet (male & female)	500 sft
4. Official staff room	450 sft
5. Trainers common room (2 person)	1100 sft
6. Head trainer's room	250 sft
7. Store room	450 sft

TOTAL = 9250 sft

5.3 Hospital & Therapy complex

This mainly a hospital complex for any kind of differently able children. This hospital complex also serves rehabilitation area for the patient.

Diagnostic health facilities:

1. Lobby	700 sft
2. Reception & counter	150 sft
3. Waiting	400 sft
4. Toilet (male & female)	300 sft
5. Doctor's & nurse lounge	300 sft

Radiology Department: X-RAY

1. Technician room	150 sft
2. Office room	100 sft
3. Dressing room	100 sft
4. Dark room	100 sft
5. Radiologist room	120 sft
6. Film collection & distribution room	250 sft

C.T. Scan:

1. Technician room	150 sft
2. Computer operating & viewing room	250 sft
3. Telepathy room	450 sft

Imaging Department:

1. E.T.T.	250 sft
2. Endoscopy	200 sft
3. Ultrasound room	200 sft
4. Echocardiography	250 sft
5. Mammography	250 sft
6. Radiologist room	120 sft
7. Film collection & distribution room	250 sft
8. Technician room	150 sft

Pathological Lab:

1. Lobby	150 sft
2. Report & file room	100 sft
3. Technician room	150 sft
4. Venipuncture cubicle	100 sft
5. Exam & test room	120 sft
6. Pathologist room	120 sft
7. Serology	150 sft
8. Histology	150 sft
9. Urinalysis biochemistry	150 sft
10. Hematology	150 sft
11. Store	50 sft

Therapy Unit: Physiotherapy

1. Exercise area	1000 sft
2. Treatment cubicles	200 sft
3. Examination room	150 sft
4. Store & toilet	150 sft

Therapy Unit: Occupational Therapy

1. Table work	600 sft
2. Bench work	600 sft
3. Ceramic, painting room	500 sft
4. Photograph dark room	150 sft
5. Store & toilet	150 sft

Therapy Unit: Hydrotherapy

1. Treatment cubicles	240 sft
2. Changing room	120 sft
3. Therapist room	100 sft
4. Hydrotherapy pool	250 sft
5. Store & toilet	150 sft

Therapy Unit: Speech & Hearing Therapy

1. Consultancy cubicles	550 sft
2. Test room	180 sft
3. Control room	60 sft
4. Record room	60 sft
5. Teaching of ADL	300 sft
6. Store & toilet	150 sft

Therapy Unit: Mental Health Therapy

1. Therapist examination room	220 sft
2. Quiet room	150 sft
3. Social space for recreational therapy	400 sft
4. Group therapy	300 sft
5. Store & toilet	150 sft

TOTAL = 13550 sft

5.4 School complex

This school have special education for differently able children. Four different types of disable children can study here from class 1-5.

1. Lobby + Waiting + Toilet	650 sft
2. Class room/ studio workshop	3000 sft
3. Activity room	600 sft
4. Teacher's /Trainer's room + toilet	600 sft
5. Workshop	600 sft
6. Headmaster room + toilet	450 sft
7. Administrative office	450 sft

TOTAL = 6450 sft

5.5 Multipurpose Hall

This is a part of school complex. Sometimes it will be used by training and resource department. This hall is also use for cultural practicing area for the students.

5.6 Cafeteria

1. Lobby	200 sft
2. Indoor served space	1500 sft
3. Kitchen + pantry	600 sft
4. Hand wash & toilet	200 sft

TOTAL = 2500 sft

CHAPTER 06: Conceptual Stage and Design Development

6.1 Design Initial Thought Process and Driving Forces:

The program has three different functions. Hospital, school and administration building. There is a 60' wide vehicular road on the west side of the site that's why the hospital complex which needs more vehicular access should place front of the site. Administrative and school complex also place near to the road. As the site was elongated to north south so these 3 types of block: hospital, administrative building, and school were placed in this direction. There are lots of trees in the site so spaces should respect this things and the direction.

Each of these three buildings will have relative functions. As it will be designed for differently able children so the main focus of this project will be the circulation which will connect the whole complex together. There will be open spaces like terraces to make them interact with each other so that they can come out from the monotonous environment and feel the same as a normal child.

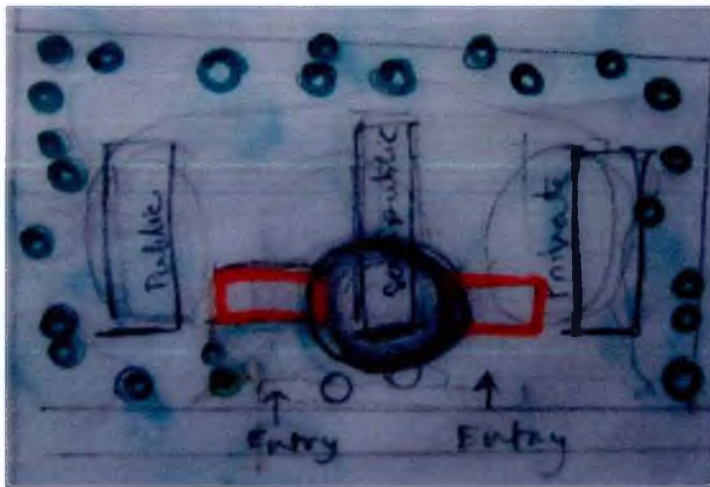


Fig: 11.zoning study

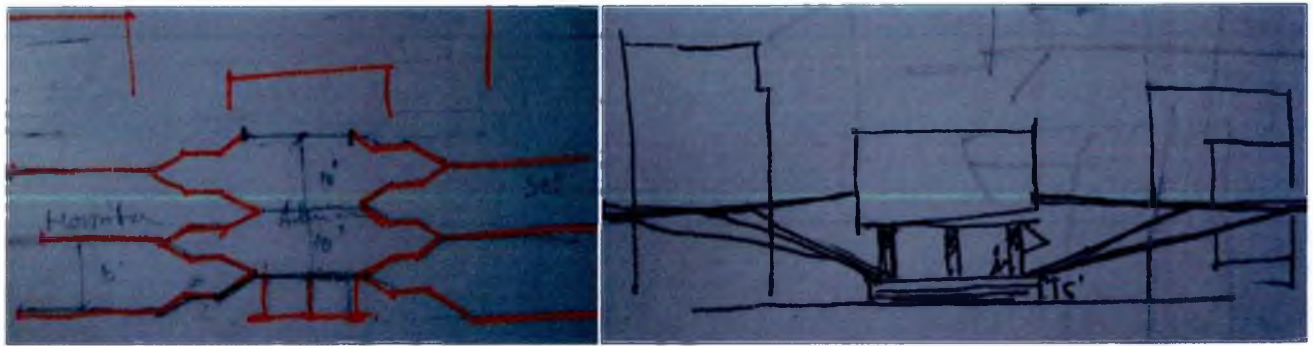
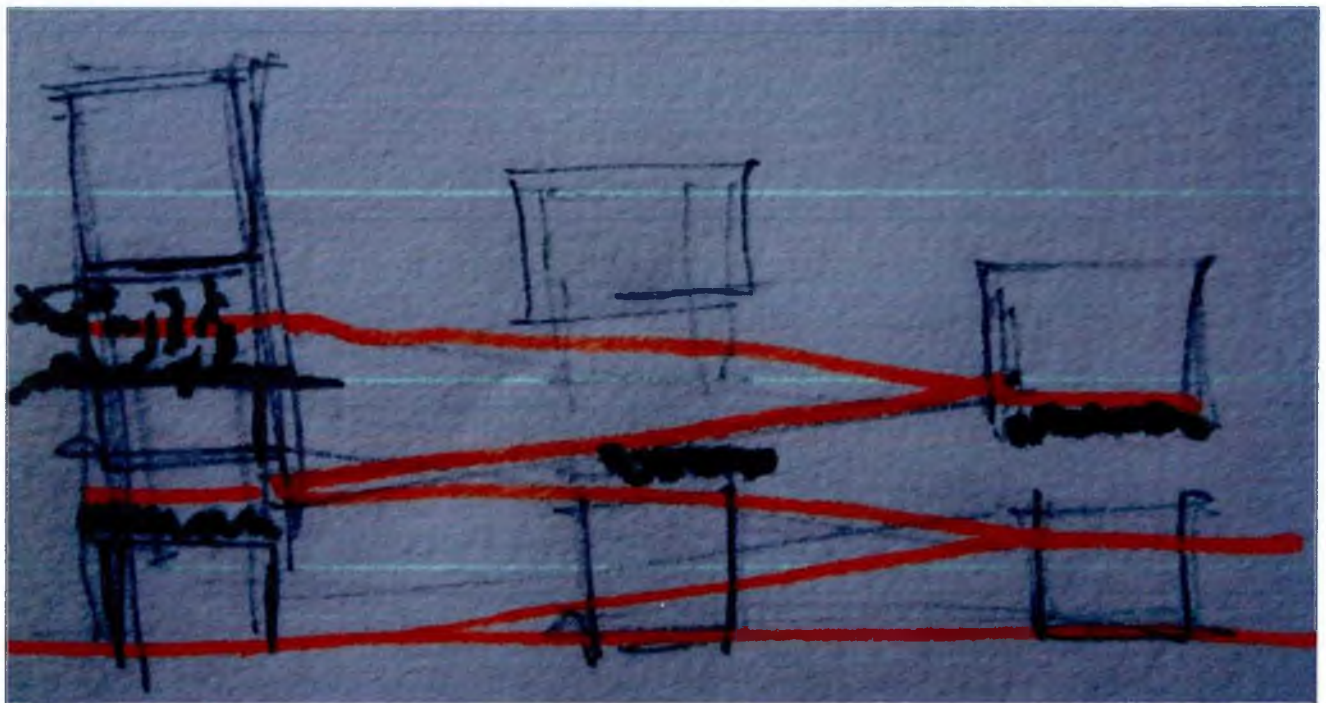


Fig: 11.conceptual sketches

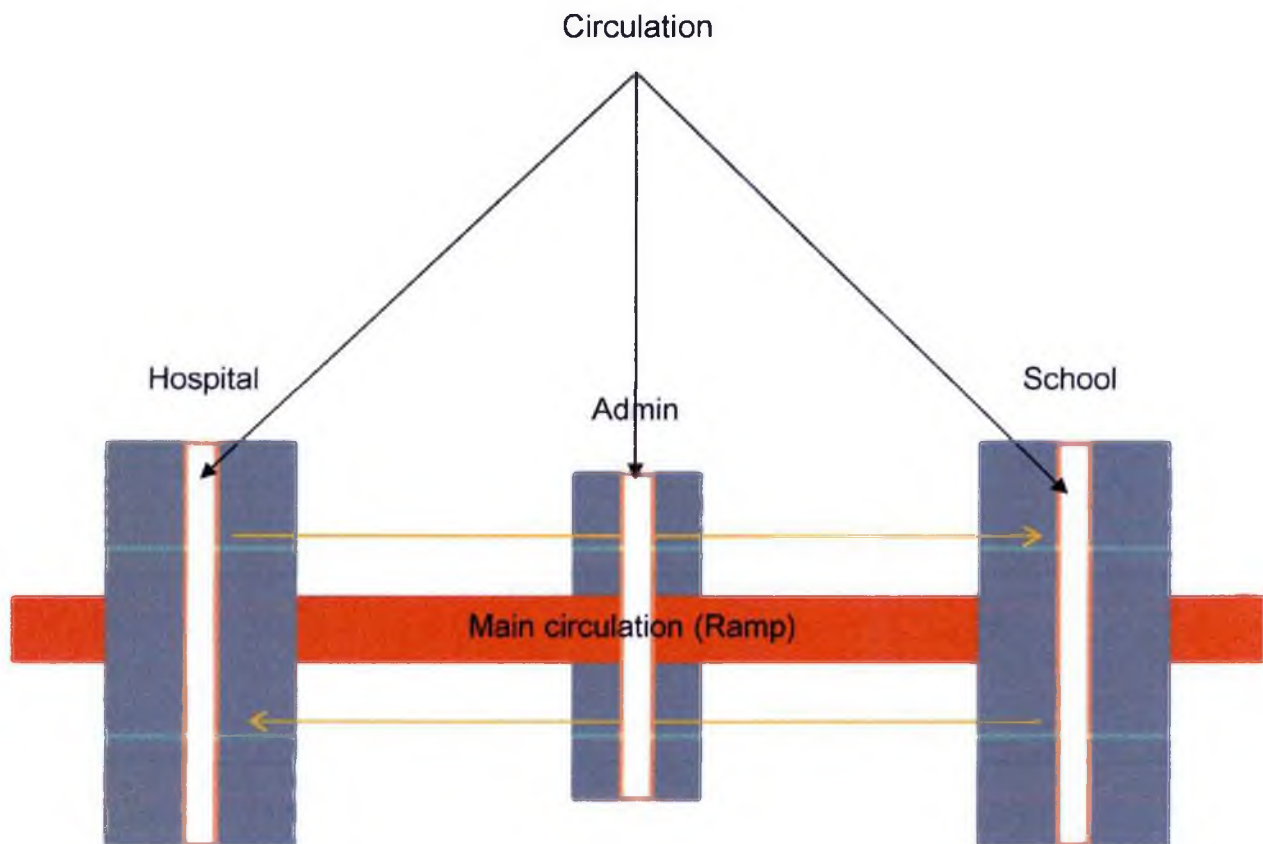
Initial idea is to link this three building with a connection which will be its main circulation and also a space for experience. Though ramp is one of the main features of disability so my idea was to connect these three different types of functional building with ramp and make it one for differently able children. This is not only an access to these three buildings but also an entry to the society part of the society where the differently able children are neglected.



6.2 Design Development:

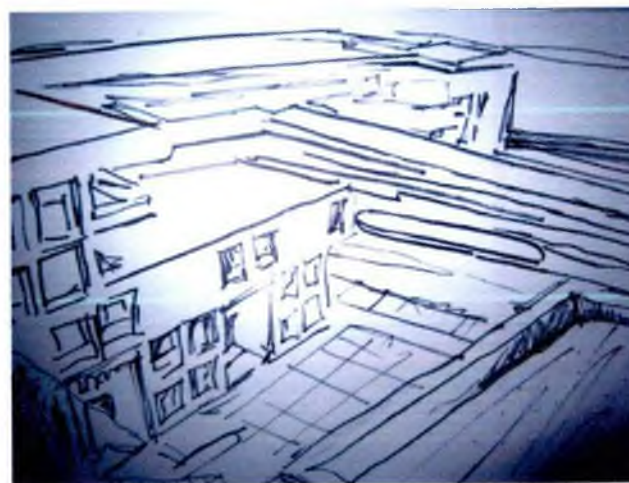
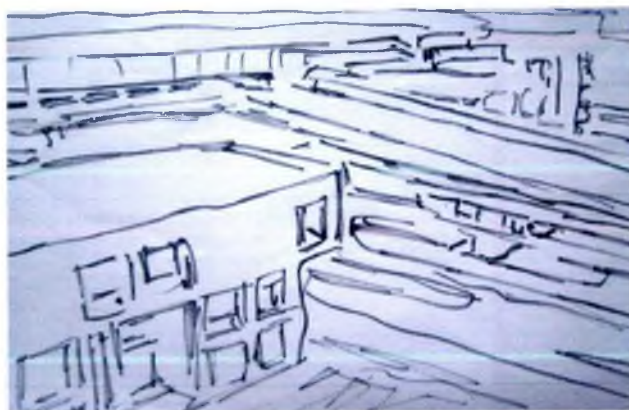
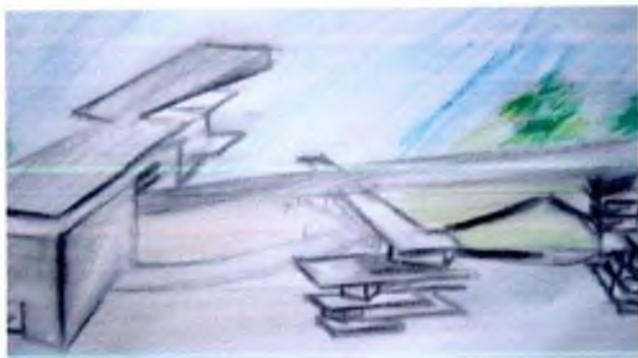
6.2.1 Phase 1: Design Idea

Each of these three buildings will have relative functions. As it will be designed for differently able children so the main focus of this project will be the circulation which will connect the whole complex together. Different court creates for different types of functional group. There is an assembly place for students which are also use for outdoor performance place.

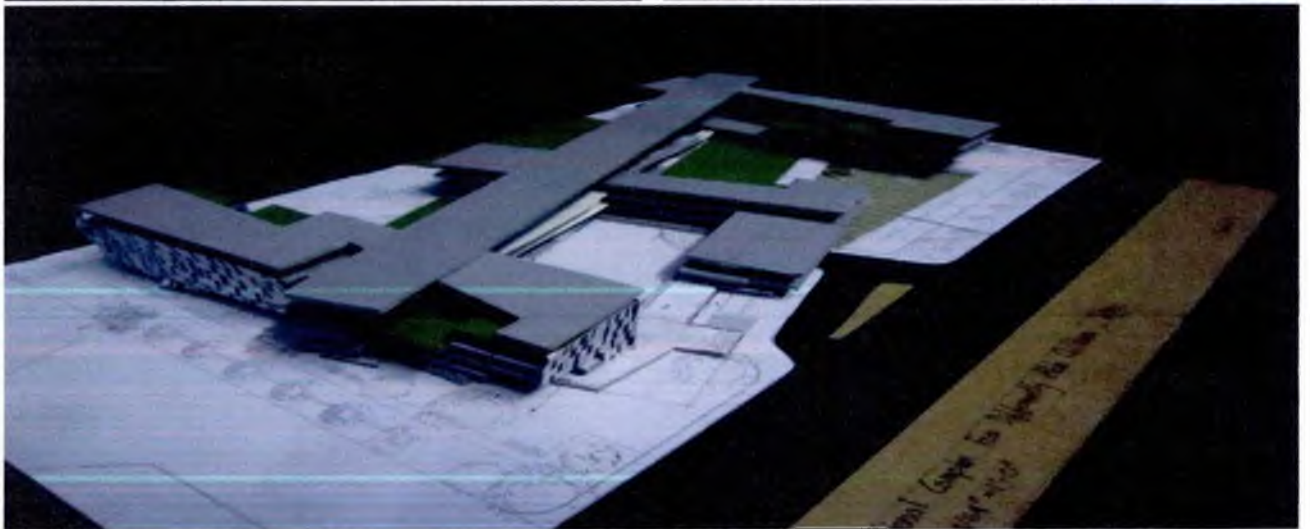
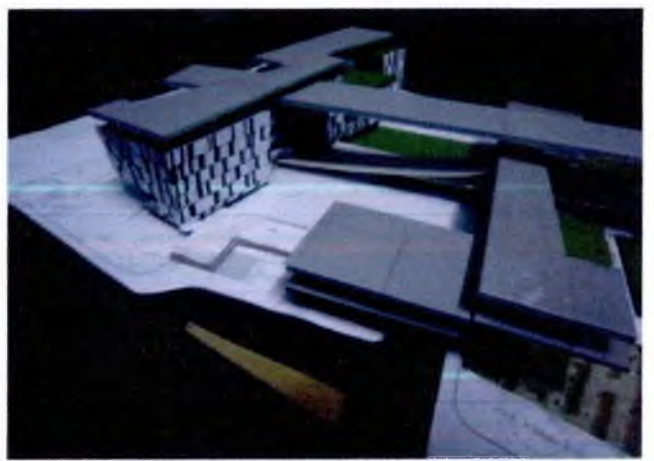
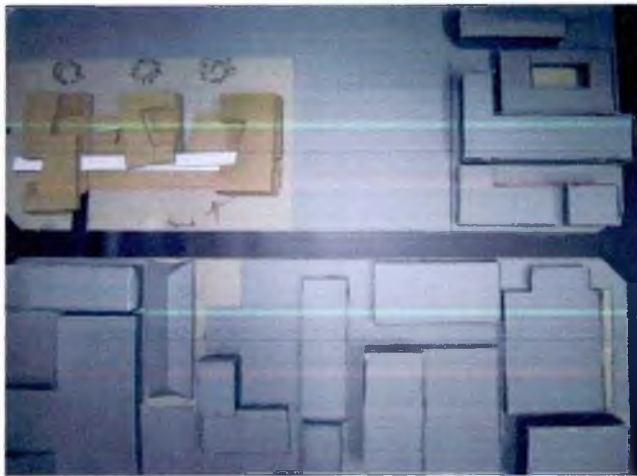


Circulation creating the connectivity

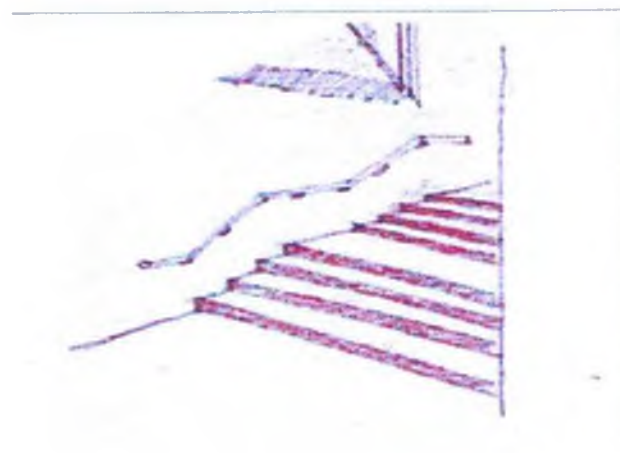
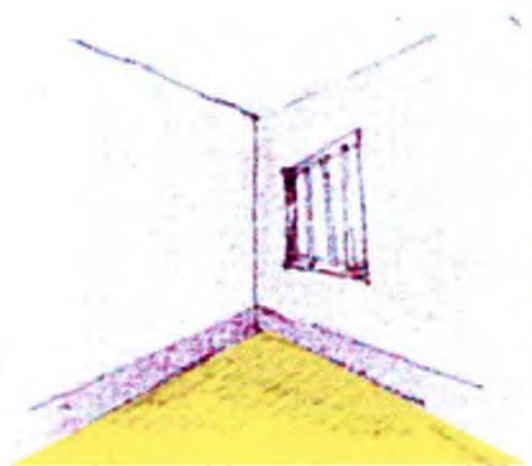
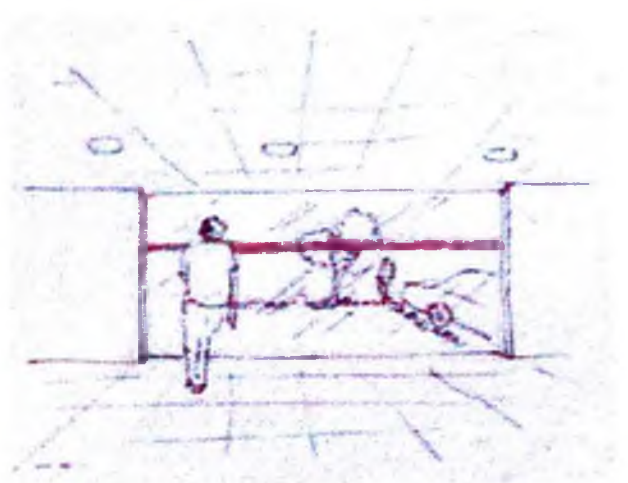
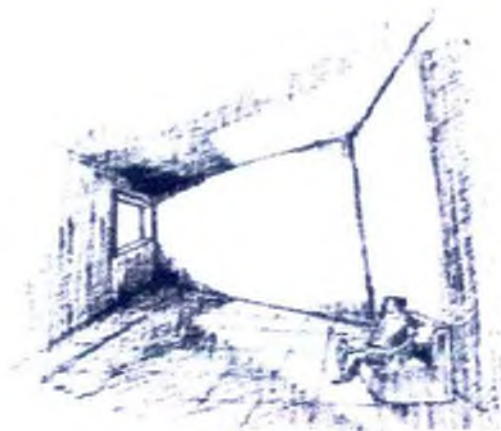
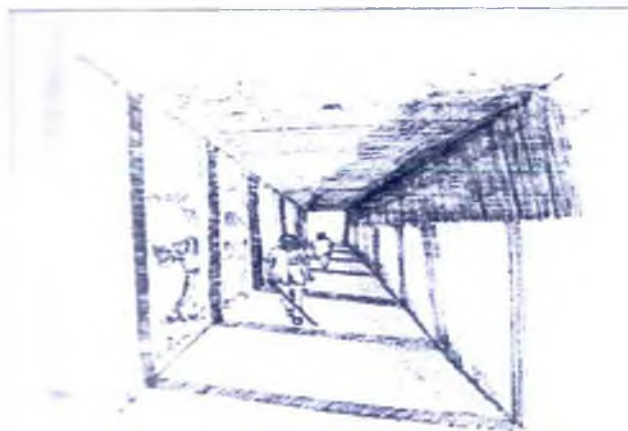
Design Idea through Sketches:

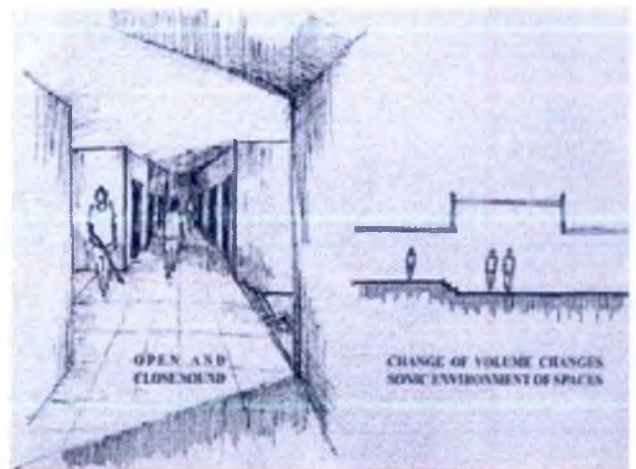
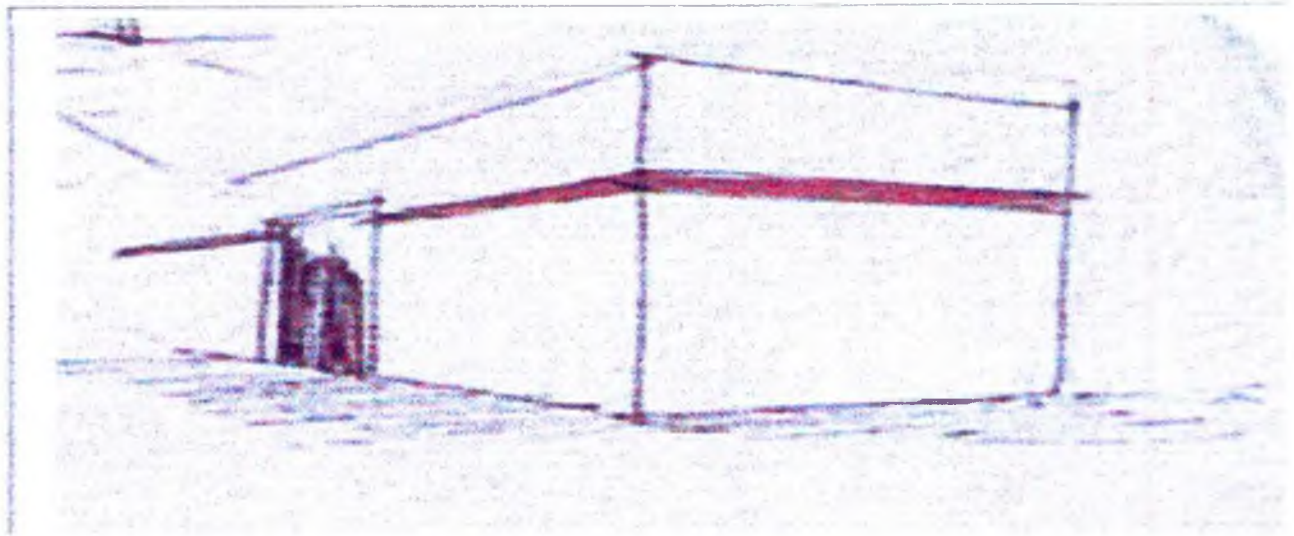


Design Development through Study model:

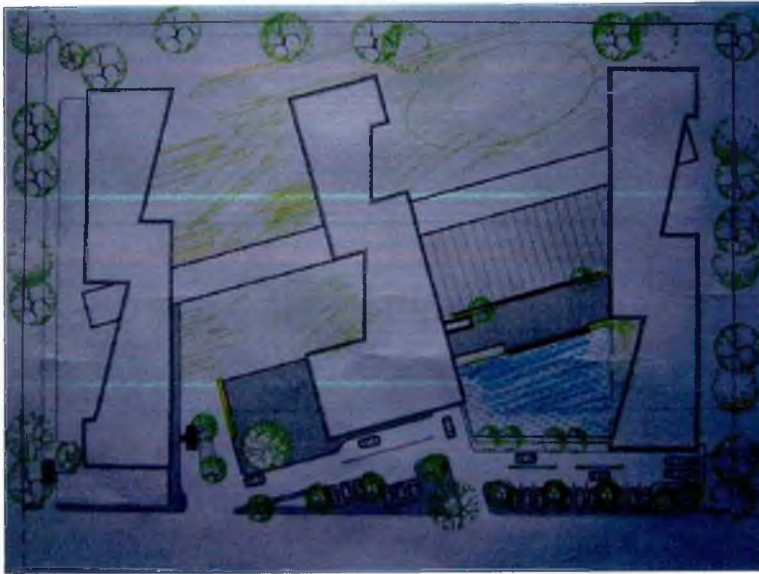


Study Sketches:

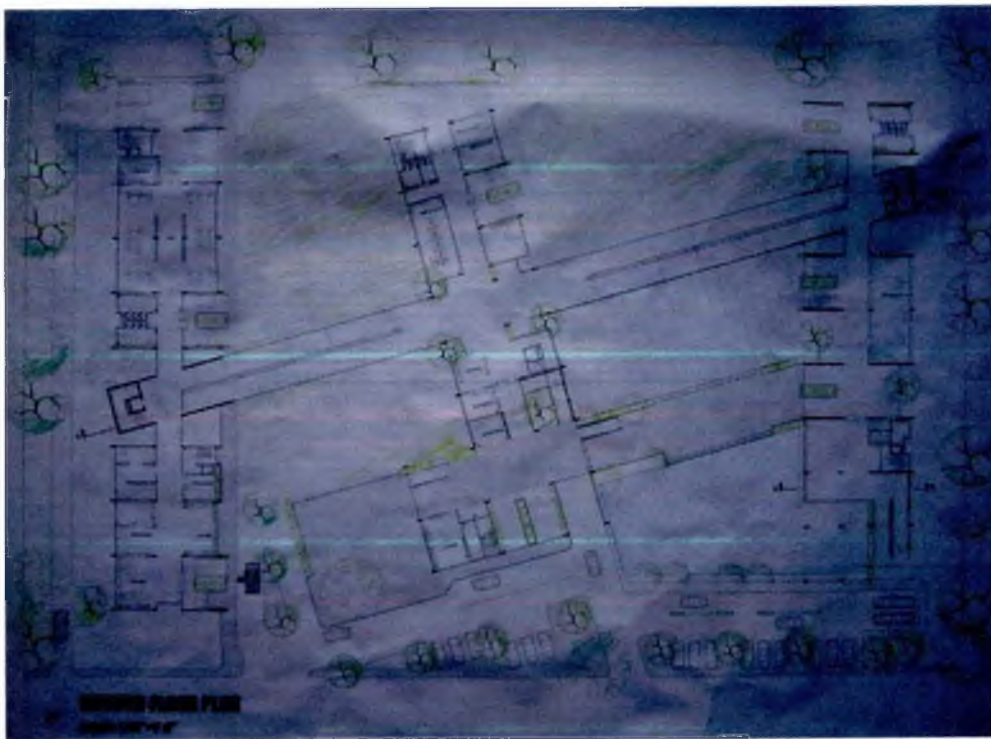




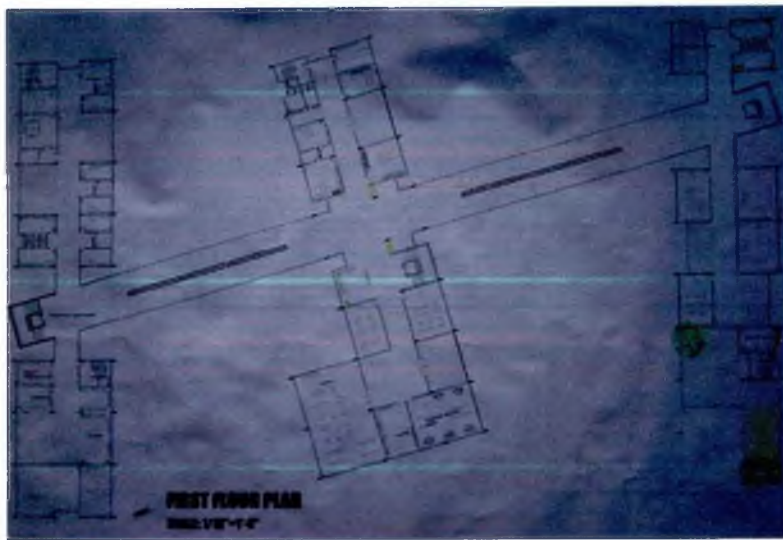
Conceptual study sketches_ considerations of interior space for disable children. Class rooms with the variation.



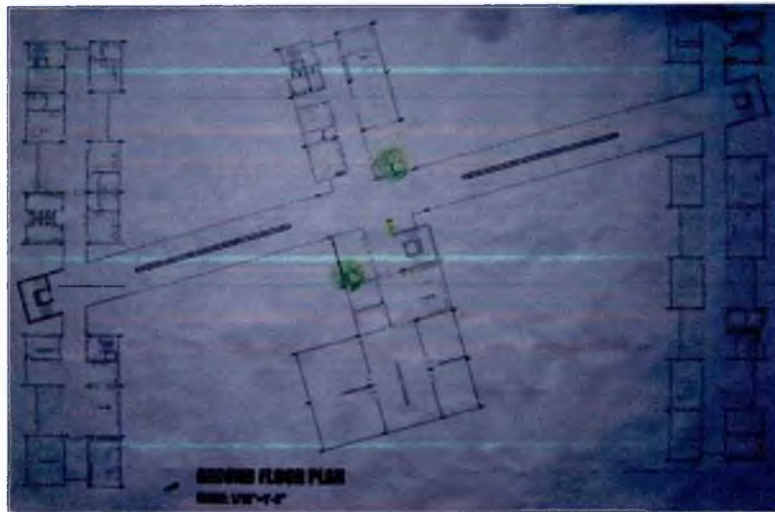
Roof Plan



Ground Floor Plan



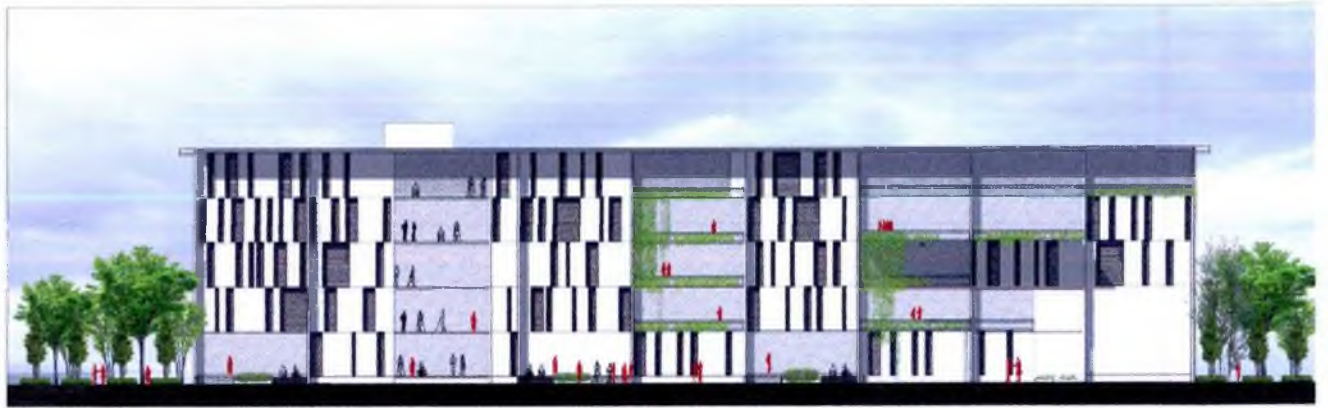
First Floor Plan



Second Floor Plan



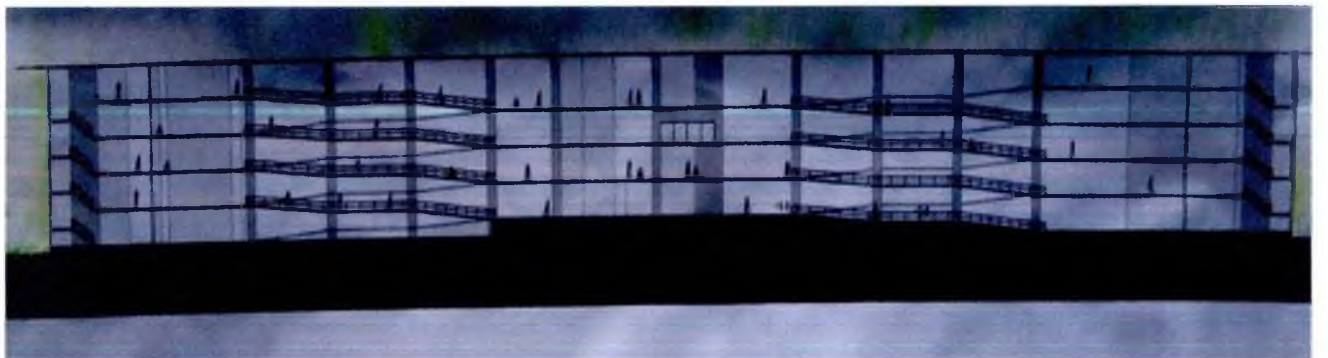
Third Floor Plan



South Elevation (school block)

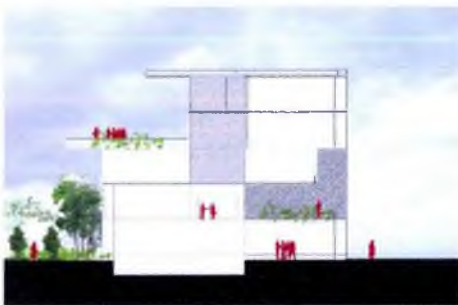
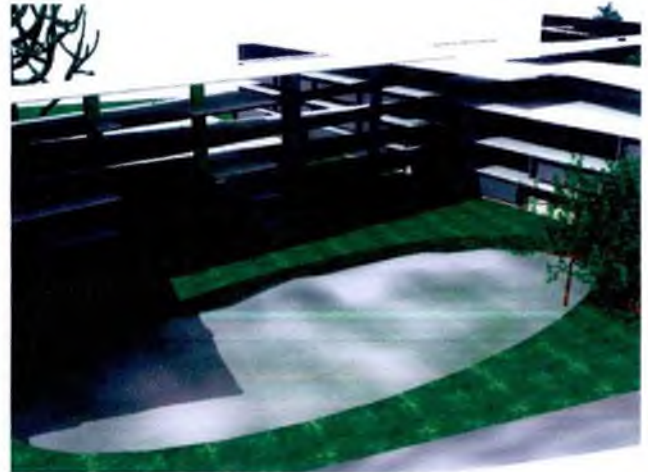
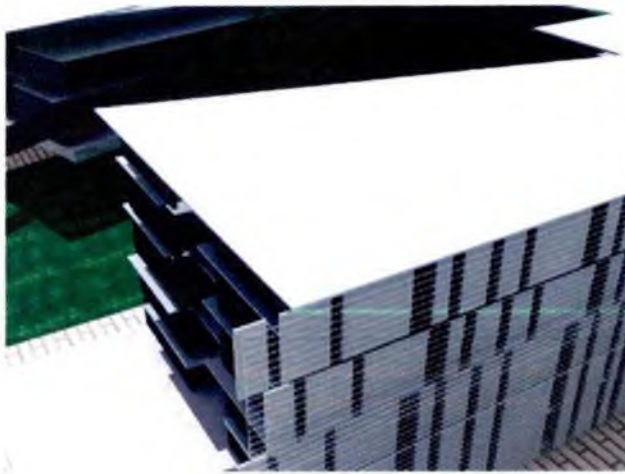


North Elevation (hospital block)



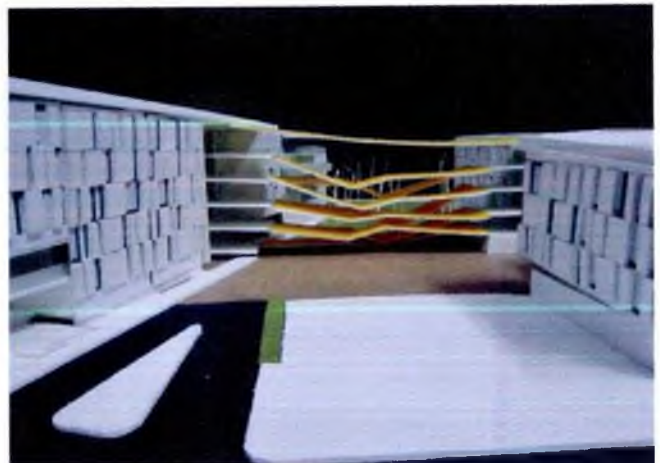
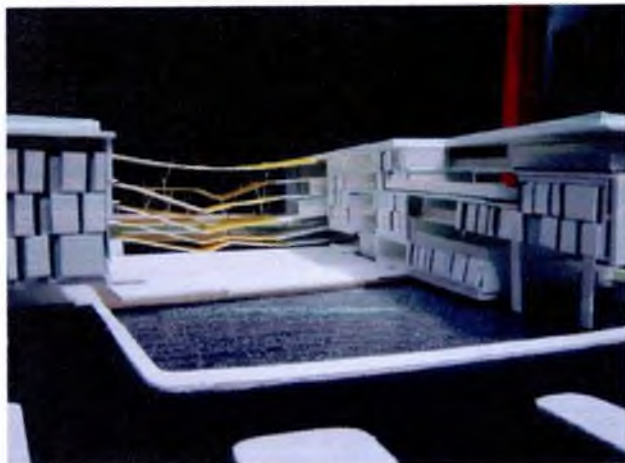
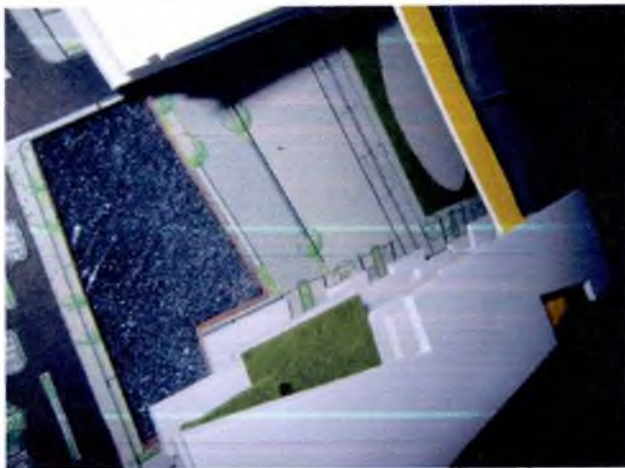
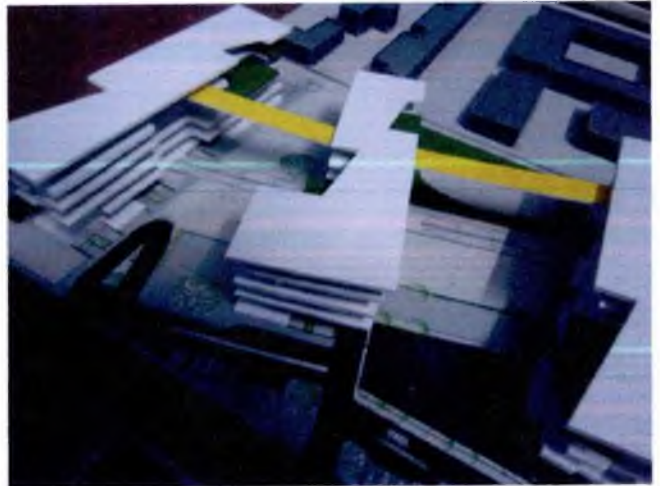
Section AA'

3D Images:



Images of green space, relationship with built forms
gardening as a major therapy works in every level. Shaded and open terrace for gardening.
Double height planted space.

Final Model:





7. Conclusion:

The design has finally ended with effective and prospective output and has a desire to have healthy and survival and breathable as well as learning environment which will enhance and enrich the maximum potential and confidence and standup independently with the outside world.

8. Reference:

- An accessibility manual for people with disabilities, AKM Momin
- Institute of integrated special education, John Devik
- The development of personal space in school, Children journal Kallayani
- Vision and Mission, Center for the rehabilitation of the paralyzed (CRP)
- Design consideration for accessibility, 2006, USAID
- Pakkhapat Batra, CRP, 2002-2006
- [http\\www.Disability.com](http://www.Disability.com)
- [http\\www.Types of disability.com](http://www.Types of disability.com)
- [http\\www. Hearing Impairment .com](http://www. Hearing Impairment .com)

9. Acknowledgement:

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- Impact Foundation Bangladesh
- Jatio Andha Sangstha
- Vocational Training Center for the Handicapped