CHAPTER VIII

SUGGESTIVE PROGRAMMES FOR CHILDREN WITH SPECIAL NEEDS (BOTH WITHIN AND BEYOND THE MUSEUM)
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Suggestive programmes for children with special needs (both within and beyond the museums)

While designing educational and recreational programmes for children beyond museums as well as within museums the needs of urban and rural handicapped children cannot be ignored at any cost. Due emphasis has to be given to bring out their hidden and inherent potentials which is directly related to their growth and well-being. Handicap affects growth and development considerably. Children may have various categories of handicaps such as blind, partially sighted, deaf, partially hearing, physically handicapped, delicate maladjusted, educationally subnormal and speech defects. Blind and partially sighted children may be classified within visual perceptual category. These children have intellectual abilities along with special finger sight and tactile acuteness. So, experience with touch, taste, smell and finger using could be stimulated among visually handicapped children with the help of braille method of study. There are children with adequate vision but with perceptual imparity. Though these children do not have actually have any difficulty in seeing a shape or an object but flounder in interpreting what they see. So, these children lack the ability to interpret an object seen into a meaningful concept. Deaf and partially hearing children may have varied problems ranging from hereditary, injury, viral infections, diseases etc. The most immediate effect of impaired hearing is on speech reception and communication.

Children with physical handicaps could be the ill effects of abnormal brain function and improper brain development. Manipulation of the environment such as provision of mechanical aids for children with brain incapacity to learn normally, but children with cerebral palsy and hydrocephalous need more assistance to overcome
their disability and learn. The spastic conditions may be classified according to the limbs and ataxic movements involved. Slow learning children have several problems such as inherited disabilities, environmental conditions, physical conditions, psychological conditions, intellectual invalidity conditions may have a sub-normal mental age. Maladjusted children show evidence of emotional instability or psychological disturbance and require special educational treatment, they may show lack of constancy of mental thoughts and deeds.

Autistic children may have several learning difficulties like delay in understanding, using language, short attention span, self-injury and reluctance to modification in the environment. Dyslexic children also have some problems in reading and pronouncing some words.

The basic components of education for the handicapped children are basically the same as that of the general category of children, in the sense that both require visual, audio or audio-visual techniques of teaching. But the centres of both formal and informal teaching of handicapped children are few in India. Mental handicap may impede the education of children to a large extent, but endeavours can be taken up by formal centres or mental clinics by using museum duplicate objects as aids for imparting enjoyment. These museum objects must not be fragile or original and provided to such organisation as loan exhibits. Models, plaster casts, fibre glass models could also be lent out to such homes. The physically handicapped children may be engaged and engrossed in learning and enjoyable activities at the museum.

Therapeutic education is essential for children with speech defects, cerebral palsy, paralysis, brain defects, damaged nerve and muscle mechanism. Crippled children also require therapeutic education for re-developing their muscles, which have become weak due to some acute diseases, like poliomyelitis of the spinal cord. It is indeed a pity...
that there are hardly a few museums catering to handicapped children in India. Physically handicapped children have social and psychological complexes. Therefore museums have a positive social role to play and convert all disability of children into their assets and every frustration into foundation for success through museum activities. The physically handicapped group encompasses varied types, such as blind, deaf, mute, crippled, epileptic etc. Handicapped children have emotional and psychological problems of adjustment and are shy due to their impediments. They need to bring out their hidden potentials and creativity through self-expression. Museums are the enterprising centres which can share their immense educational and delightful resources with handicapped children, since rural and semi-urban areas can provide very little opportunities to children with special needs. Museums can disseminate education through audio-visual means so that blind, deaf, mute, crippled children can be benefitted to some extent. Tactile sensation is highly developed in blind children. They can conceptualize things by touching and feeling them. They can make models of things by touching and feeling their surfaces. Education of the visually impaired has been successful with the complete set of Braille alphabets. Touch and feel method of education is the most suitable for visually impaired children since they can easily grasp the technical skill as well appreciate artistic objects by tactile sensation. Creative centres and hobby centres in museums can offer scope to gather experience in weaving, carpentry, scientific model making, fabrication of light engineering objects. Museums can organise special workshops for visually handicapped children in museums or beyond museum in blind schools, community centres, informal centres for education where museum specimens are laid before the children on big flat topped tables for touching and feeling. These objects may be then identified and interpreted by visually impaired children. Some cut out letters and models can also be laid out on tables for easy access of visually impaired children.
The visually impaired may be provided with audio stimulation to provoke their learning and doing activities in museums. These audio commentaries can be used for their instruction as well since it is troublesome to individually instruct every child. The visually impaired children require the assistance of their teacher or museum educator who would be able to guide them. For this some specially trained personnel would be of great help. Physically handicapped children can gain a first-hand knowledge of museum exhibits if they are provided with plaster cast toys and dolls to play with. Children who have impairments of their arms can learn and amuse themselves through charts, models, pictures, photographs, slide shows, film shows, audio-visual aids etc. Crippled children face problems in moving around galleries without suitable aids like wheel chairs or lifts, so it would be preferable if a specific gallery is allotted to children with special needs having objects of all types and low stools or mats to sit on. This gallery must be near the entrance so that children on wheel chairs can also be accommodated inside. Specimens which are inexpensive and duplicate may be handled and viewed by children with special needs. Some relevant background information about the objects needs to be imparted to them since they are less privileged than ordinary children in sensory development and general knowledge. Some museums such as the National Museum of Natural history organizes workshops for making teaching aids for visually-handicapped children, nature study camps for the handicapped besides touch, feel and learn programmes for the visually impaired children. These programmes are held regularly once a month for benefit of handicapped children with the aids of objects, audio aids and braille materials. Special guided tours and workbook activity for deaf and dumb children are also promoted. Special assistance is provided for physically handicapped children. Every year during winter, a week long programme and activities are arranged for handicapped children at the National Museum of National History, New Delhi.
Imparting education through enjoyment to the children with special needs cannot be achieved by the activities of a few museums in India. Each and every museum can do its best to orient children positively in their creative and aesthetic inclinations. Some of the activities could be endorsed for children with special needs as well as the general children. Local crafts, arts, historical objects, scientific models and geographical models could be employed by museums for identification and interpretation of things in their right environmental situations. Children with special needs need to understand their surroundings and adjust to them prior to learning. Learning readiness among special children can be imbued only if they are intrinsically motivated and eager to learn. So amiable situations and friendly atmosphere is the prime requisite for special children since they are oversensitive and skeptical by nature. They do not feel easy in strange environs, owing to their inferiority complex. So their complex has to be disencumbered as far as possible by engrossing them in activities of all types which would amplify their self-confidence. Inferiority complex could be detrimental to the mental maturity and development of special children. So they are not to be sympathised for their disability but treated as most normal children by museum educators, museum assistants or volunteers beyond or within museums.

Mentally handicapped children lack the power of concentration. So, they must be allowed to touch and feel durable duplicate objects without much mental exertion. Sand play, clay modelling of simple objects may be interesting and feasible for children with mental handicap. They may be given modern objects without sharp edges to play with or else they may injure themselves. Colourful objects may fascinate such children. These children must be accompanied by their teachers or assistants when they are brought to museums from their formal institutions in groups since they need to manifest their problems and needs and be reassured in alien surroundings of the museum. Since museums
are the proffers of objects or exhibits in logical and orderly manner thus functioning as most suitable tools for learning and amusement of children with special needs. But more display of meaningful objects would perhaps not be able to influence self-learning, arouse curiosity and have a lasting impression on the minds of these children. Therefore, programmes and activities which cultivate education, promote interaction and encourage participation have to be formulated for children with physical disabilities by museums. Such programmes inspire the building up of self-esteem and instill confidence in children who have special needs. Visually impaired children have to seek the help of audio forms of learning and tactile sensations to enrich themselves mentally. They require the guidance of museum educators or volunteers in their activities. Quiz contests can be organized for visually impaired children on various aspects such as environmental hazards, general knowledge, health, hygiene, epidemics, school curriculum pertaining subjects like history, geography, science etc. It would be helpful if a recording of some general information based on different subjects is played for the visually impaired children prior to the quiz contest. For example, a popular science talk could be organized prior to a science quiz. Duplicate objects dealing with historical and geographical evidence such as globes, models of plants, weapons, coins could be the learning materials for children which they would touch and feel before answering questions. Toys and dolls help a great deal in the training of senses. Soft cuddly toys like teddy bears, monkeys, rabbits elevate children's zeal for activity. Wooden objects, cut out models, jigsaw puzzles of large sizes heighten children's enthusiasm. Story-telling may be organised by museums for visually impaired children along with the story-telling activities of the general children, by encouraging them to narrate stories, recite poems and sing. Slides, charts, pictures, models, films, photographs could serve as stimulating learning materials for hearing impaired children. Drawing, painting, craft work pertaining to museum objects would induce self-learning of the
children. Museum objects such as sculptures, models, archaeological objects, anthropological exhibits could be drawn and painted by them. Paper models of anthropological tools, earth, planets etc. could be fabricated by children in museums. Clay models of toy birds and animals could be constructed by children out of plasticine and plaster of Paris if possible. Thus creative instincts of children with special needs can be gratified along with their sensorial development. Replicas of museum objects help in replenishing the disability and mental anguish of children with special needs as they usher these children into a world of enjoyment combining fantasy with reality, work with pleasure and learning with playing. These replica dolls and toys may include animal toys, human figurines, made of clay, terracotta wood or pith. Dynamic folk toys could be very appealing to children with special needs. Sound producing toys are not meant for use in museums such as drums or rattles but these toys would be effective for museum outreach programmes to attract children in rural and semi-rural areas. Jig-saw puzzles and pattern blocks are easy to perceive and work out. They do not require much interpretation. Children who are physically handicapped excepting visually impaired children can participate in puzzle solving and pattern making activities in museums. Puzzles could be based on parts of animals mixed up and requires reassembling of these parts. Pattern making could encompass making patterns out of coloured blocks of different shapes, sizes and colour. Such activities are profitable to pre-school children and primary stage children with special needs as they keep them busy, engrossed and attentive, restore their self-confidence and will-power.

Visually impaired children can be benefitted by jig-saw puzzles which can be touched and felt and assimilated. Such activities help in motor co-ordination and eye-hand co-ordination. Puppets may be effective aids of education to the hearing impaired and means of entertainment to the mentally handicapped children. Puppets can convey ideas and concepts to the special children who have been
deprived of their own completeness by nature. Imagination, self-expression, creativity can be imbibed in children with special needs if they are involved in designing and fabricating puppets with the assistance of museum educators and puppeteers. Dramatics, mimicry, performing arts and dance can be effective means of imparting informal education and entertainment to the children with special needs. Work-sheets on museum activities may be applicable for the hearing-impaired in museums. Here activities based on identification assimilation and comparison may be allotted to them. Active learning of children can be inspired since children lose interest in passive learning after some time. Aesthetic activities, constructive activities are creative activities which can aggravate the spirit of learning by doing among the children with special needs. These children like to indulge in absorbing constructive clay modelling activities such as clay models of fruits, animals, vegetables, birds and objects of their choice, their play things like cups and saucers, guns etc. Attribute blocks are potent means of creative self-learning of children with special needs of pre-school and primary stages. A set of pattern blocks including various shapes like squares, circles, trapezoid, rectangle, triangle and hexagons of different sizes and colours may be the aids to be introduced in educating children with special needs in museums. Visually impaired children could feel the different shapes and identify them. Other special children with physical disability could draw similar shapes on paper by outlining these shapes and colour them. They could also arrange the shapes according to their colours sequentially on the basis of their sizes. Such blocks enable strong perception and develop shape, size, colour concept, thinking, reasoning and stimulate the scientific aspects of children's minds. Blocks could be given to children to make things like train, tower, house, vehicles out of them. Origamy or paper folding activities can form part of the museum programmes for children with special needs. Since origamy requires less complicated materials and is simple in its technique it is very attractive to children. Origamy could be included as a
part of museum activity for children with special needs, because of the handling experience, dexterity, muscular co-ordination, that is involved in these activities. Museum educators can help children with the help of an instruction manual. Weekly programmes for craft making, mask making, puppet making, painting and origami can help children to develop their intrinsic potentials. Intellectual development of children with special needs can be enhanced by puzzles, mazes, completion of patterns, quiz programmes, painting and colouring. Jig-saw puzzles with interlocking pieces, wooden tool sets, like carpenters set, doctors set, animal sets are very exciting and definitely leads to practical learning of children with special needs. Physically handicapped children are emotional and self-conscious. They try to keep away from other normal children. Interactive, positive involving situations are to be made available to them to nurture their creative instincts. Puppets can be made out of paper and stick, strings and match boxes by children with special needs. Masks can be made out of clay covered with layers of old newspaper pasted on its face with gum and painted well to represent the character intended. For the hand-puppet tubes can be made to fit the fingers. Yarn can be used for hair and rolls of paper can be used for arms, legs and body for making the body of the puppet strong. Strong cord or string may be attached for fastening the parts of the puppet.

Imagination of physically handicapped children must not be squelched, but logical thinking, analytical ability, has to be inculcated in them. Sensorial development is the essential pre-requisite of children of pre-school and primary stages with special needs, prior to any other learning. For this smell boards and touch boards can be highly motivating. Smell board may have a set of boxes having different materials with various odours like perfume, garlic odour, sweet odour, and children are supposed to discriminate the individual odours. Touch boards have several objects of various surfaces like rough, smooth, hard, soft, silky, furry, metallic. Children are expected to touch and feel these surfaces and draw inferences regarding the kind of object the surface belongs to, such as, rough...
surface of a stone or the soft surface of a cloth, etc.

Simple scientific experiments based on objects like magnets, pet animals and plants may be carried out by children with special needs. Demonstration of scientific principles, like gravity, buoyancy, signifying objects which float or sink in water may be observed by children with special needs at the science museums with the help of museum educators or museum guides. Stuffed birds and animals at the museum may help to create awareness about the varieties of birds, animals, modifications of beaks and legs adapting to their food habits, may be concrete learning and engrossing material for children with special needs. Pre-school and primary children are usually very alert and observant. If they are asked to co-relate the beaks and claws of certain birds with their feeding mechanism. In this way they can gain a first hand knowledge of their natural environment around them. Museums have various kinds of anthropological objects, such as stone tools, bone tools, copper, iron and bronze objects, bows, arrows, harpoons of contemporary tribal society. If these can be assimilated into activities and programmes with the help of dioramas and slides it would be very interesting as well as educative. Children love to play and enjoy, so if they can learn things easily through museum games and activities. Huts made of branches of trees, like sal, mahua, bamboo and coconut leaves can be shown in dioramas to children at the museum. In this way they can come closer to nature in spite of their physical incapacities.

Sculptures are very interesting and help to create aesthetic sense among children with special needs. They provoke an artistic sense among them and facilitate them to appreciate art. Scrolls can be made for children by museums depicting interesting themes. Hearing impaired children can be encouraged to paint scrolls during their vacations by holding scroll painting workshops and camps.

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Hearing handicapped children can be taken to film-shows and video shows organized by museums in their auditoriums on wild life, birds, environment, geographical realms, geological excavations, archaeological excavations, ecological balance, ecosystem natural resources etc.

Spastic and mentally handicapped children can be stimulated by muscular co-ordinating activities like counting beads or pellets, pouring liquids, playing in sand pits constructed in the corner of the museum garden. They can also play with dolls and toys of unbreakable type and elevate their imagination.

Some museum replica objects, touch and feel objects, models may be sent to the formal institutions for the mentally retarded children who are paralysed, have muscular dis co-ordination due to damaged cerebellum called ataxia and speech failure due to damage of speech centre called aphasia. These children can also attain some happiness by touching and feeling such objects. They are disadvantaged by their disabilities and need to compensate their loss by indulging in all kinds of participating activities leading to all round education. Spoons, rattles, balls could be play items for mentally retarded children. Harmless toys, non-toxic in nature, without sharp edges are to be chosen for children with special needs of pre-school and primary stages. Plastic and wooden toy sets could be given to these children to play and enjoy in the most congenial atmosphere of the museum. Miniature sized coloured animal toys, easy to handle should be selected for children with special needs of pre-school and primary stages. Psychotic children fail to communicate with others due to lack of speech or largely affected by autism. Mute children have difficulty in communication and tend to feel frustrated; so they are involved in participative activities for a long duration with creative toy making. Questionnaires related to different galleries can be formulated for children with physical handicap. Visually impaired children may be asked questions verbally and the answers may be noted down. Visual means of
education or audio-visual means of education appeal to and fascinate children making them aware and simultaneously unconscious of their disabilities. Unusual and multiple handicaps include epilepsy, mental handicap, physical handicap, blindness and deafness. Special programmes for such children need to be worked out by the museums and reached out to the respective centres in the form of mobile units carrying museum duplicate objects, loan kits and fabricating material like clay, paper, plasticine, cloth etc.

Tactile responses are well developed in such children and replicas of museum objects may be explored by such children for their enjoyment and enlightenment. Replicas of terra-cotta toys, sculptures, cut out enlarged models of vehicles inlay models of ancient civilizations, life size models of insects and animals, models of the earth, its interior, solar system would impart education and boost up the confidence of children with special needs who are mentally and physically unstable and insecure. They need to fortify their will-power and positive sentiments and create favourable circumstances for themselves.

Stuffed toys of simple types such as cloth and rug stuffed dolls depicting teddy bears, fish, monkeys, dogs, rabbits are highly enchanting to children with special needs.

Travelling exhibitions would be the best resort for learning and doing of children with special needs. These mobile units must have touch and feel exhibits for education and amusement of both handicapped and non-handicapped children of pre-school and primary stages. Expensive programmes and activities for children in museums is inconceivable in India, where most of the rural children are unfortunate in having been deprived of the basic necessities and amenities of life like food, clothing, shelter and formal education due to financial constraints. Other practical problems are the transport of objects to and from the museum. Museums must be intimated beforehand regarding group visits of handicapped children to enable museums to receive the participants wholeheartedly.
These handicapped children may attend museum programmes once a month only since it is difficult to bring them to museums often. Museums may take their outreach programmes with loan kits and replicas to these centres for education on a regular basis along with pertinent raw material for children's activity such as clay, cardboard and simple materials which are easily portable and best suited for pre-school and primary children. The mobile museum units which cater education to pre-school and primary stage, general children, can also act as resource centres for children with special needs beyond the museum. The awareness of shapes, forms and textures can heighten a child's sensitivity to its environment and contribute to appreciation of their surroundings. Co-ordination of brain, eye-hand and muscular co-ordination is vital for the development of both mental and physical attributes of children. Unless a child is physically and mentally fit to learn all forms of aids for encouraging learning would turn out to be futile. According to Kolb's learning cycle, active experimentation leads to concrete experience, which in turn leads to reflective observation, which eventually leads to abstract conceptualisation. Normal children develop various skills through independent exploration, whereas handicapped children fail to develop skills in this manner. They show very little inclination to play on their own, they get stuck at the primitive form of repetitive play, which does not lead to progress. Play has to be structured for them so that children not only learn through play but also learn how to indulge in play. One of the encouraging outcomes of this method would be that handicapped children gradually begin to get engrossed in spontaneous play outside the teaching session and step by step begin to practice and develop their skills independently.

The generalisations of experience occur only when children apply their skills freely in their unrestrained play. These are particularly important because they are without inhibitions and can follow them in their own inclinations. Unrestricted play is important for the all-round development of handicapped children. The essence of ... 166/-
free play is that it is maintained by its own momentum and can develop without any assistance. Gross motor exercises for mutual co-operation in the form of variety of games based on a familiar ground games with movement. There may be solitary free play involving gross motor skills. Sensory motor skills can be developed with the help of sound play, water play, modelling and painting activities. Playing with live animals like rabbits, cat, dog, tortoises, birds makes them interested about animal behaviour. Social play could be enthralling for children with special needs. Here group games may be played, such as memory games for visually handicapped children, pointing out or making the odd one type of discriminating games for hearing impaired. Games based on assimilation, association, identification and recognition may be organized by museums for children with special needs with the help of teachers, volunteers, instructors and museum personnel. Psychologists and psychoanalysts can help to solve mental problems of mentally handicapped children and can advise museum personnel on the kind of activities that would be engrossing and purposeful for mentally impaired children in museums. Physiotherapists can help to solve certain problems of physically handicapped children by suggesting activities to promote learning and activate muscular development and co-ordination of children of pre-school and primary stages. Special endeavour needs to be taken by museums for these children in the form of specified programmes at a specified time once a month or twice a month for physically handicapped children for about two hours depending on the resource potential and museum personnel.

Two dimensional works of art may be developed for visually impaired children. They can explore by opening drawers, boxes and doors. A sound track system activated by touching fingers, employing voice and sound, entertains and educate children. So museums have to make special endeavours and attempts to educate handicapped children of pre-school and primary stages through various programmes designed exclusively for them. Some proposals have been outlined to fascinate and educate children with special needs of pre-school
and primary stages within the museum and beyond the museum which are as follows:-

Scroll *pats* have an immense visual appeal for children of pre-school and primary stages irrespective of handicapped and general children. They behold concrete ideas and concepts from these paintings which would be in the rear otherwise. Children derive learning experiences from scroll *pats* which elaborate various themes relevant to their conceptions and interest. (Fig. 133)

Such scroll *pats* could be utilised in the best possible way to enchant and interest children with special needs in museums. Dolls and toys displayed in museums could be educative and enthralling learning and 'hands-on' experiences to children with special needs. These dolls and toys may include human figurines, animals, birds, chariots, gods and goddesses etc. Children can be given replica dolls and toys to play with at museums. (Fig. 134)

Puppets could be the means of imparting education to children with special needs, with the least use of language. Puppets could be of various types such as finger puppets. These could be manipulated by children on their fingers. These are easy to make and play with. Different characters can be impersonated with the help of finger puppets. (Fig. 135)

Rod or stick puppets could be made easily. Arms are made from long tube with a pebble or small weight stitched or tied into the ends to form weighted hands. This tube is then tied or stuck to the top end of the rod. (Fig. 136)

Children with special needs are curious by nature. Nevertheless they cannot attain knowledge by reading books since they may have physical handicaps like visual disability. They may be unable to enrich themselves from the audio-visual media due to their hearing and speech disability. Thus their general knowledge remains back dated. So, charts pertaining to general awareness such as houses of different geographical regions, the earth and other planets, types of plants, extinct and endangered animals, tools used in every day life and their functions and other such relevant issues may be highlighted for children with special needs to encourage their learning and upgrade their general knowledge. (Fig. 137).

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Toy making activities for children with special needs may be organized by museums. Toys may be dynamic toys or static toys and dolls. Dynamic toys based on scientific principles could have a profound effect on the learning of pre-school and primary stage children with special needs. They would be stimulated to actively indulge in creative activities at the museum. A match box telephone is a toy for children with special needs which is easy to make and requires readily available raw materials such as match boxes and a piece of thread about 3 metres in length. A hole is made in the centre of the outer and inner match cases. The two ends of the thread are passed through these holes and a match stick is tied at each end of the thread to ensure that it does not come out of the holes. One match box case is held near the ear and the other match box case is held near the mouth of the speaker. Children will hear the voice quite clearly. Physically disabled children having defects of movement, walking, muscular defects but are visually and can hear normally can make best use of this toy. (Fig. 138)

This toy delights children and provokes scientific learning in children.

The match-box drum is a toy for children with special needs which can be fabricated for the hearing impaired children as learning and playing toy material. Hearing impaired children of the primary stages can make these toys by themselves. An empty match box, a bamboo stick of 5 mm diameter, a piece of string and a stone or a cork can be used. A hole is made on the two ends of the matchbox case. The stick is fixed vertically. One end of the thread is tied around the box and fixed. A cork or stone is tied to the other end. The strings length is adjusted so that the cork or stone strikes the broad face of the matchbox. This toy would excite children with hearing impairments at the museum and inspire them to indulge in creative activities at the museum. (Fig. 139)

A fascinating toy for the mentally handicapped children is the Yo-Yo. It has been proposed to entertain and educate children with special needs. It is easy to make and can be made at museums by hearing impaired children. Two circular pieces of
thick cardboard are cut, each having a diameter of 15 cms approximately. A hole is made at the centre of each disc and a pencil can be fixed as the axle. The edges of the discs may be smoothened out. It has to be kept in mind that the distance between the discs should not be more than 2 cms. A thread of length 50 cms. is tied to the pencil between the two discs and this thread is wound around the pencil. The free end of the thread is held and the spool is let to go down vertically. When the spool just reaches the end of the thread, a little jerk is given. The spool rolls down and climbs up again, rewinding the thread on its own as it rolls upward. The 'up and down' motion can be repeated a number of times. Such toys work on scientific principle of momentum. Children can develop scientific temperament by fabricating and playing with such toys. (Fig. 140)

Rattles are fascinating toys for children of pre-school and primary stages particularly children with special needs, who are unable to focus their attention on complicated play things and fail to derive benefit from them. The Balloon Rattle is made by using a common balloon in which a few grains are put before inflating. The balloon is tied to a bamboo or reed stick with a piece of thread. When the toy is jerked and moved it makes sound. Visually impaired pre-school children can be given such toys to amuse themselves by museums. These children usually feel a little left-out so such toys could keep them occupied and make them feel important since they can be allowed to carry these toys home from the museum. Such toys not only enchant children but gave them an idea about wind energy. (Fig. 141)

Toy siren is a proposed toy for children with special needs. It works on the principle of wind energy. A balloon is blown and the opening is held with both hands so that no air can escape. Then the balloon is stretched outwards and a little air is allowed to pass out producing a fascinating sound, which attracts children of pre-school and primary stages. It is a sound producing toy resulting due to vibration of membrane. Children of the primary stages and some pre-school children can make this toy without much effort. (Fig. 142)
Guidelines have been proposed for making toy aeroplane for children with special needs. Since these children get less opportunities of scientific exposure they tend to lag behind in scientific knowledge and practical approach. This toy is based on Bernoulli principle of Aerodynamics. A paper of 15 cms x 30 cms. is taken and folded as depicted in the figure. Children can glide it after it is complete and link up science and learning. (Fig. 143)

Another proposed toy for children with special needs is the toy parachute. It is made with a help of a handkerchief or a plastic sheet, four pieces of thread and a stone. Pieces of thread of equal length are tied to the four corners of the handkerchief. The corners are brought together by folding them to converge towards the centre of the handkerchief or plastic sheet. When thrown up in the air it descends very slowly very much like a real parachute. The parachute is based on the scientific principle of air drag of aerodynamics.  (Fig.144)

Children with special needs, especially hearing impaired children crave for activity as they are not in a position to overcome their complexes and feel lost in alien surroundings. They require activities pertaining to their interests and involvement. Kite making could make an interesting proposed activity in museums. This kite making has to be the simplest type involving the use of ordinary paper of 20 cm x 15 cm size and a string. The paper is folded on both sides and a string is tied to the paper on both sides. The small strings are in turn tied to a long string before flying. (Fig.145)

A paper helicopter could be made by children at the museum. This proposed activity would enrich the minds of children and refresh them with new zeal and enthusiasm to learn. The toy helicopter could be made by fixing a cardboard strip of size 20 cms x 3 cms to a circular pencil or rounded bamboo stick 6 mm in diameter and 20 cms in length. If a piece of bamboo is used then its one end is sharpened like a pencil point. The cardboard strip is to be affixed to the pointed edge of the bamboo, glue can be used. The blades are twisted a
little, and the stick is held vertically between the palms. The stick is spun by sliding the palms and throwing the toy quickly up into the air. This toy is based on the scientific principle of Aerodynamics named propellor action. Children are interested to find out how certain things occur and this toy would indeed prove its worth of participation and activity for children with special needs of pre-school and primary stages in museums. (Fig.146)

A toy paper windmill is a popular toy for all children irrespective of whether they are handicapped or not. The methodology of making a toy windmill has been proposed to entertain children with special needs, particularly of pre-school and primary stages. A thin but stiff piece of paper about 15 cms x 15 cms, a pin, two beads and a reed or bamboo stick are the required materials. Lines are marked and the paper is cut according to the figure shown and the blades are folded but not to be creased. The four folded blades are to be fixed. A bead is put in front of the pin. The pin is passed through in such a way that it holds the four blades together. The second bead of the rear end of the pin is put and the pin is fixed on the stick. This toy would be very enchanting to make and primary stage children with hearing disability could make this toy themselves at the museum and satisfy their creative instincts. If this toy is held against the wind it would rotate and delight children immensely. This toy is based on the scientific principle of energy storage and conversion exhibiting the phenomenon of rotational motion due to air flow. (Fig.147)

Origami is a craft which can create interesting objects of different shapes with the help of a piece of paper. It is a thrilling and pleasing adventure combining art with imagination, finds expression in creation of concrete forms. This activity may turn out to be one of the most delightful hobbies in later childhood if pursued with interest since early childhood. This activity offers ample scope to the creative talents of children synchronising learning and doing both.
Flapping Bird is a toy proposed for children with special needs of pre-school and primary stages. The opposite corners of a square are held and folded in turn. The paper is kept folded in half. The two ends of the folded edge are held between fingers and thumb. The ends are brought down so that the corners of the paper come together creating four flaps A.B.C.& D. The flaps are folded. B is folded to the left and C to the right. The lower edges of the flaps B and C are folded to the vertical central crease. The top triangular area is folded forward over a horizontal edge. A firm crease is made and returned. B and C are open to its sides. The top layer of the paper on the horizontal crease is raised. The bottom point is then pulled up as far as it can go. The two edges are made to meet. The edges are pressed firmly and the paper is turned over and similar steps are repeated on flaps A and D as shown in figure. (Fig.148)

The output resulting from the aforesaid steps is taken and the top left flap is taken over to the right. It is then turned over and the same steps are repeated. Now there will be two narrow pointed flaps at the top. One is to be pulled to the left. The paper is pressed flat to fix the point in its new position. The other point is fixed to the right. Similarly, the bottom point is folded up on a line just below the existing horizontal crease. It is then turned over and the same things are done on the reverse. One of the side points are held and turned downwards to fix the back. Thus the bird has almost taken shape, with its neck, head, tail, two wings. The wings can be curved slightly by rubbing them between the fingers and thumb. The bottom of the bird's neck is held with one hand and its tail is pulled repeatedly with the other so that its wings flap. This toy is indeed charming to children with special needs of pre-school stages at the museum. (Fig.149)

A toy based on the scientific principle relating the phenomenon of sail effect of aerodynamics is proposed for hearing impaired children of pre-school and primary stages in museums. Primary stage children can make this toy at the museum and pre-school children can play with them. Some outlines of making a fleeing doll is proposed. The figure of a doll is
drawn on a piece of chart paper with a pencil. The size of the paper can be 12 cm x 12 cm. The figure of the doll is cut out along with the portion in the centre of the doll to form the stand. The lower strip is pushed outside and folded. Air is blown at the cut out portion of the doll. It will slide without falling down. This toy would be highly appreciated by pre-school stage children irrespective of whether they are physically handicapped or not. (Fig. 150)

Shimmering fish is a toy which aims at engrossing children with special needs. It has been proposed for children of the pre-school stages. The requirements for making this toy include an old sketch pen cap, a divider, thread, sticks. An old sketch pen cap is taken and a hole is made with the help of a divider near its closed end. A length of sewing thread is passed through the hole. The ends are knotted to two sticks. The sticks are separated to make the thread taut and see the cap falling in jerks. It appears like a shimmering fish. If the hole has become too big for the thread then a crayon can be press fitted into the cap. This toy is based on the scientific principle of energy conversion and storage. (Fig. 151)

Butterflies spellbind children by their natural beauty of brilliant colours. Children are often seen to run after butterflies with nets to catch them. They could be dissuaded from harming these beautiful gifts of nature by learning to make toy butterflies themselves. A piece of paper could be cut into 10 cm x 10 cm size. A crease has to be made at the centre, the paper is placed on the floor and the central portion of the paper is to be raised to a height of 1 cm. If air is blown directly under the paper it begins to flutter like a butterfly. Coloured, spotted and printed paper could be used to obtain the maximum effects of a real butterfly fluttering. This proposed toy enthralls pre-school children with special needs, a great deal. (Fig. 152)

Outlines have been proposed for making a toy cigarette leaf frog for pre-school children with special needs. Countless cigarette packets are discarded every day. If these could be...
used in satisfying creative instincts of children it would prove to be worthwhile. The paper foil is removed from a discarded cigarette pack. The two corners of one side are folded along the dotted line as shown in figure. Another fold is made to point A. It is then pressed upside down and pressed at the other side with the forefinger. The silver foil jumps like a frog. Hearing impaired children can be shown models or mounted specimens of frogs and toads prior to letting them participate in creative activity. If a live corner is maintained, by the museum, where children can see real frogs and toads leaping around it would be very encouraging for them. (Fig.153) In this way they can come closer to nature and have the real feel of it.

Proposed creative activities in museums are aimed to help in inherent development of the physically handicapped children simultaneously contributing to their enjoyment as well. The pertinent and most likely question to arise is that such creative activities can be nurtured at home in other formal institutions, then why museums are being dragged into these kinds of proposed activities. The fact remains that museums have immense potentials of varied nature under one roof, and can act as resource centres to propagate education to children, adults, masses as well as children with special needs in the form of activities stimulating learning and creativity of children through 'playing and doing'. Children with special needs may not have a congenial formal atmosphere to learn and play simultaneously. They may not be all that fortunate in having a cordial learning and creative development environment at home to enable them to arouse their self-expression or the necessary kits or gadgets to be the best preferences as tools in shaping, educating and amusing pre-school and primary children with special needs. Outlines for making a toy jet plane have been proposed for handicapped children. (Fig.154) A rectangular piece of paper of 15 cms x 20 cms is taken. The top corners are folded so that they meet at 'O' in the figure. Another fold is given along the horizontal base running through
'O'. The fold is also made along the dotted lines X and Y as shown in the figure. The point A is folded towards the top along the dotted line. The next fold is vertical along OA. Then it is folded along the dotted line. It is then turned towards the base as shown and the plane is ready to fly. If the wings are given a little curve, the plane would glide. The plane is thrown up in the air and it can glide up and down. This toy is based on the Bernoullipinciple of Aerodynamics.

Besides these toy making activities several other exciting programmes could be formulated for children with special needs such as worksheets on co-relation, assimilation recognition, identification, comparison, part-whole relationship, discrimination and association. For example a worksheet has been proposed for education and enjoyment of hearing impaired children of pre-school and primary stages in museums. This worksheet deals with the food chain of a ecosystem. As children are aware that the ecological balance and food chain are the vital factors of any ecosystem. This worksheet aims at making the children with special needs aware of their environment and develop concepts about the ecological balance of nature. (Fig.155)

Birds and animals have been interesting gifts of nature for all children. Children with special needs are amazed and astonished by nature's creation though they are unable to see them in their natural habitat due to their physical limitations. But their curiosity remains unattended, if they are restricted from exploring their natural environment. So alternatives can be sought in the form of worksheets dealing with identification of birds and animals to delight and engross children.

A worksheet has been proposed on identification of birds for children with special needs, particularly physically handicapped, and hearing impaired of pre-school and primary stages encompassing recognition and identification of common birds seen regularly in the cities, towns and villages in India. (Fig.156)
Visually handicapped children also need to be involved in museum programmes to enrich them mentally by imbibing knowledge in them in the form of first hand direct handling of museum objects. Replica toys and dolls of the museums may be given to them to touch and feel, proposed clay modelling activities for visually impaired children may be conducted with the help of a potter or clay toy maker in museums. The clay required for making toys and dolls must be made available to children at museums. Potters can help these children to use various moulds by touching and feeling their surfaces. After making some simple toys, which can amuse children they are to be dried in the sun. Children can be encouraged to make toy pots, utensils, urns as they would be interested in museums to satisfy their constructive instinct which has been suppressed due to their visual incapacity. They would feel excited in having been able to overcome their handicap and prove their abilities. So such activities must be promoted by museums to morally upgrade such handicapped children. (Fig.157)

Museums can use their mobile units to reach out to the children with special needs at their formal and informal educational centres. In India such educational centres for children with special needs of different categories are not many, so they may be catered to by mobile museum units which have various kinds of duplicate objects and dioramas in their museo-buses. These exhibits could help to attract the attention and arouse curiosity of children with special needs. (Fig.158) Museums in big cities and towns have immense resources and exhibits which could provide enjoyment and conceptual learning to children with special needs. The Birla Industrial and Technological Museum, Calcutta has a number of participative and interactive exhibits in the children's gallery which could be beneficial to children with special hearing needs. This gallery also has some touch and feel objects which could stimulate visually impaired children. (Fig.159)

Dolls and toys of several museums such as Ashutosh Museum of Indian Art, University of Calcutta, The International Dolls Museum, New Delhi, Gurusaday Museum, Joka, West Bengal and
many other such museums may be employed for the learning and involvement of handicapped children particularly of pre-school and primary stages. Such toys enliven the minds of children, heighten their imagination and help them in conceptualising various relevant aspects. (Fig. 160)

The Nehru Children's Museum, Calcutta has working models of toys like elephant, horse and train which are highly appealing to children with special needs particularly the hearing handicapped children who can have the feel of a galloping horse by riding a toy mechanical working horse. This fascinates such children and lets them have an exciting experience in the museum without much effort. The miniature models depicting epics would prove to be a source of delight and wonder to children with hearing and speech defects. (Fig. 161)

Visually handicapped children can be given cut out enlarged models of cardboard, plastic or other unbreakable materials of different parts of animals which may be required to be fixed to each other like puzzles. Children may be asked to arrange the parts correctly by picking the correct pieces from the box given. Such activities would help to instill self-confidence among them and build up their moral strength indicating their self-dependence.

A worksheet may be proposed and designed for hearing and speech impaired children as well as some mentally handicapped children who can afford to concentrate and understand simple issues. In this worksheet a picture of a zebra is mixed up with a tiger's body and a lion's tail. Children are required to draw the correct parts of any one animal, for example, a zebra or tiger may be drawn and coloured by children as museum activity, if possible after a visit to the zoological gallery of the museum. (Fig. 162)

A similar kind of worksheet has been proposed for children with learning disabilities like dyslexia, ataxia, mental handicap, slightly abnormal children as well as children with speech and hearing defects. The worksheet may include ... 178/-
identification and recognition of the parts of different animals like camel, cock, horse. Children may be asked to draw these animals completely and point out the mistakes of the picture given. (Fig. 163)

An interesting worksheet dealing with co-relating and associating activities for children with special needs on common things used in daily life such as cup and saucer, knife and fork, thread and needle etc. Such activities promote the general knowledge and common sense of these children with special needs. (Fig. 164)

Proposed worksheets have been designed aiming to enhance children's observation and reasoning ability particularly those having hearing and speech defects and cannot express themselves verbally. (Fig. 165)

Children with special needs have lack of confidence and motivation to learn formally because of their inhibitions and difficulty in overcoming their physical inabilities and complexes. So engrossing activities would be the best way to unfold their latent potentials and discard their inhibitions, instill confidence and bliss within them. A proposed worksheet deals with the drawing, painting and colouring activities of children with hearing and speech related handicap of pre-school stages. They may be given the drawing of a mixed up animal having the neck and head of a duck, the body and legs of an elephant and a tail of a cheetah. The children are expected to draw three complete animals, colour or paint them correctly after paying a visit to the zoological gallery, prior to engaging in this activity. This would upgrade their observation and memory, develop concentration and bring contentment. (Fig. 166)

Children can learn by practical experiences if they play with meaningful toys which can introduce them to a scientific method of working, along with stimulating them aesthetically. Playing in museums promotes group learning and gradually leads to a development of social affinity among children irrespective of their socio-economic background.
Museum objects such as replicas of sculptures, wooden objects, coins, anthropological objects, geological specimens could be employed to impart education and enjoyment to children with special needs, since most of the time these duplicated objects are left idle with no definite purpose. Toys and dolls could be stimulating material to arouse mental development and satisfy curiosity of these children who are deprived of the privilege of asking questions to quench their inquisitiveness. Discovery boxes full of handling material, paintings, scroll pats may provoke their imagination. But it is essential to make the maximum use of museum objects by designing museum activities and programmes both indoors and outdoors to impart education and contentment to children with special needs by their active involvement in creative activities, thus catering to their full-fledged intrinsic development.
Fig. 134 Educative and enthralling dolls and toys for children with special needs at Patrapara, Kolighat, Calcutta.
Fig. 135 Finger puppets for children with special needs.
Fig. 136  Rod puppets for children which are highly appealing to children with special needs
Fig. 137 Proposed charts on general awareness for children with special needs on kinds of tools.
Fig. 138 Sketch of proposed guidelines for making match box telephone for children.
Fig. 139 Sketch of proposed guidelines for making match box drum for children.
Fig. 140 Proposed guidelines for making a toy Yo-Yo.
Fig. 141 Proposed outlines for making a balloon rattle.
Proposed outlines for making a toy siren for children.
Fig. 143 Proposed guidelines for making a toy aeroplane for children.
Fig. 144 Proposed guidelines for making a toy parachute for children.
Fig. 145 Proposed guidelines for making a small kite for children.
Fig. 146 Proposed guidelines for making a toy helicopter for children.
Fig. 147 Proposed guidelines for making a paper toy windmill for children.
Fig. 148 Proposed guidelines for making a paper flapping bird by Origamy for children.
Fig. 149 Proposed guidelines for making a toy paper flapping bird II by Origami for children.
Fig. 150: Proposed guidelines for making a toy paper fleecing doll for children.
Fig. 151 Proposed outlines for making a toy shimmering object for children.
Fig. 152 Proposed outlines for making a paper toy butterfly for children.
Fig. 153 Proposed outlines for making a paper toy leap frog for children.
Fig. 154 Proposed outlines for making a paper jet plant for children.
Fig.155 Proposed worksheet on food chain for children.
Fig. 156 Proposed worksheet on identification of birds for children with special needs.
Fig. 157 Proposed clay modelling activities by potters for children.
Fig. 158 Mobile museum van with built-in diorama showing bird in its natural surroundings.
Fig. 159 Play exhibits for children, Birla Industrial and Technological Museum, Calcutta with special needs.
Fig. 160 Clay dolls and toys for children.
Gurusaday Museum, Joka, South
24-Parganas, West Bengal.
Fig. 161 Toy galloping elephant, Nehru Children's Museum, Calcutta.
Fig. 162 Worksheet on zebra for children with special needs.
Fig. 163 Worksheet on cock-camel for children with special needs.
Fig. 164 Proposed worksheet on co-relating activities.
Fig. 165 Proposed worksheet on observation fish-deer activities for children.
Fig. 166 Proposed worksheet on duck-elephant tiger for children.