

# Sensory Training Programme for Visually Impaired Children

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**Abstract-** The present study was undertaken with a purpose to build a sensory training programme for visually impaired children by assessing them regarding their sense acuity and providing need based short term intervention. The sample of the study comprised of 12 visually impaired children, from the Residential School for Blind, Jammu. The major tools used were interview schedule, Sensory Training Inventory and observations. The study revealed that the visually impaired children could identify various items of Sensory Training Inventory by different senses like the sense of touch, smell, taste and hearing. The most commonly used sense for identifying different items was the sense of touch and these children took 3-6 seconds to identify maximum items of the Inventory. All the items in the categories – Edibles, Pulses and Food grains, Soils, Textures, Electric goods, Grooming items, Laundry goods, Serving Utensils, Fresh Flowers and Miscellaneous were identified by all the subjects. The children showed confidence wherever they identified an object correctly where as their face showed sign of confusion when they failed to identify an item. The follow up of the short-term intervention programme indicate that the children could identify all those items of Sensory Training Inventory that they failed to identify earlier.

**Index Terms-** visual impairment, sensory training, sense acuity.

## I. INTRODUCTION

Vision is an important link to the physical world, helping us to gain information beyond the range of other senses, while also helping us to integrate the information acquired primarily through hearing, touch, smell and taste. The way we perceive visual stimuli shapes our interactions with, and reactions to the environment while providing a foundation for development of a more complex structure. However, not everyone is gifted with sight. A significant portion of population is sightless or visually impaired. Children who are visually impaired must rely upon their remaining senses for gaining knowledge of the world around them. Lack of sight has a major influence on gaining actual knowledge of objection world, which can then be had by touch experience only. Tactual space perception of the blind is different from visual space perception of the seeing (Cruickshank, 1971). The main reason for the difference is to be found in the fact that tactual perception requires direct contact with the object to be observed. As a consequence, blind can observe only those objects, which are accessible to them. They cannot observe things, which are inaccessible like Sun, Moon, Stars, etc., and the things, which are fragile, and liquids (which

do not have their own shape) cannot be observed by touch. However, these restrictions do not hold true for individuals with acquired visual impairment (Warren, 1984).

It is generally assumed that loss of one sense is compensated for by a more or less automatic improvement in acuity of other senses. However, the fact remains that the discrimination ability increases only by practice and not by nature and degree of blindness (Mani and Akhanna, 1994). The senses of hearing and smell have a greater utility for sightless individuals as the cues obtained through these senses are used for mobility training and orientations. The sense of taste has limited utility for visually impaired children, as it does not provide any information about the relative environment.

Sensory Training is very important for visually impaired individuals, as a lot of information about the relative environment can be gathered through different senses i.e. touch, smell, hearing and taste. The present study was undertaken to assess acuity of visually impaired children and to make these children self sufficient for various activities, to instill self confidence and develop positive self image, thereby helping them to become socially integrated.

## II. RESEARCH METHODOLOGY

The sample for the study was drawn from Residential School for Blind in Jammu city. The total numbers of inmates were 25. Out of these, 12 children who were totally blind and were in the age group of 8-10 years were selected for the study. Interviews schedule, Sensory Training Inventory and Observation were used as the major tools for collection of data.

1. Interview Schedule: An in depth interview schedule was developed with an aim to enquire about the background information of subjects and their daily living skills. On the basis of information collected through interview schedule a Sensory Training Inventory was devised.
2. Sensory Training Inventory (S.T.I): Researcher devised this inventory in order to test the sense acuity of the visually impaired children. The inventory consisted of the following categories: Fresh vegetables, Fresh fruits, Pulses and Grains Edibles, Stationary items, Different shapes, Fabrics, Building material, Different soils and textures, Postal items, Electric goods, Grooming items, Laundry goods, Play equipment, Cooking appliances, Utensils, Fresh Flowers, Currency, Plants, Miscellaneous.
3. Observations: Observations were made regarding the facial expression and time taken while identifying an object.

### III. RESULTS

Findings of the study revealed that the disability of the majority of subjects was congenital whereas one acquired it as a result of meningitis. Majority (42%) of the children had moderate experience (3-5 yrs) of institutionalization where as 33% had short experience (1-2 yrs) and 25% had long experience (6-10 yrs) of institutionalization. Most of the subjects had joined institution during middle childhood and because their parents were not aware of the institution catering to the educational needs of visually impaired children. The academic level of these children was in accordance to their age of admission to the institution. These children were lacking in personal care and housekeeping skills. They were not able to cut their nails, iron their clothes, cut fruits or vegetables because they were scared of hurting themselves while doing these activities whereas they can wash clothes, dress-undress, button-unbutton clothes, tie shoes laces, make bed independently.

The results of Sensory Training Inventory revealed that all the items in Fresh Vegetables, Fresh Fruits, Edible items and Pluses and grains category were identified by all the subjects except Beans in Fresh vegetables category which was identified only by 5 of the respondents and Pineapple in Fresh fruits category of S.T.I was identified only by 2 of the respondents. For identifying Pumpkin and Brinjal, along with sense of touch and smell (67%) of the respondents brought pumpkin and Brinjal near their near and tapped it with their finger to hear the sound they made. For identifying peas, 42% of the sample group used sense of taste along with touch and smell. Other vegetables including Bittergourd, Lady's finger, Onion, using sense of touch and smell identified tomato. Sense of touch and smell were used for identifying fresh fruits. For identifying items in edibles and pulses and grains category all the items except oil, ghee, kidney beans, rice, wheat flour, senses of touch and taste were used.

Stationary items category of the S.T.I. included seven items viz, Notebook, Pen, Pencil, Eraser, Sharpener, Scale and Compass. Out of these seven items all the respondents identified only 6 whereas only 1 item i.e. compass was identified only by two of the respondents. The reason for this was that, geometry is excluded from curriculum of visually impaired. These children were able to identify shapes like square, round elongated, triangular, semi circle and only few of them could identify rectangle as they were confusing it with square. The visually impaired children included in the sample could easily discriminate between different textures viz hard, soft, smooth, rough and different fabrics like cotton, wool, jute, poplin, and silk. Silk was identified only by 25% of the group. These children were able to identify and discriminate different soil (clay soil and sand soil) as well as building material which comprised of bricks, cement, sand, chips, only tactile discrimination was used by the respondents where as the sense of smell along with sense of touch was used to identify cement and wood. For identifying iron, tactile discrimination as well as sense of hearing was used by striking it on the floor.

In the postal items category, only the respondents identified envelope where as the other items (Post card and inland letter) were nothing more the piece of paper. All the electric goods were identified by the sample group. For identifying all the grooming items, i.e. Cream, Hair Oil, Talcum Powder, Toilet soap simultaneously, sense of touch and sense of smell was used

whereas rest of the items including Nail cutter, Scissor, Comb, Shaving brush, Razor, Blade were identified only using tactile discrimination. The subjects identified all the items in laundry goods category. All the respondents identified only four out of 7 items in the play equipment category of S.T.I. These four items were Bat, Ball, Marbles and Football, where as rest of the items Hockey stick was identified by 6 of the respondents and Racket and Shuttle cock, were identified only by 3 respondents. All the subjects identified all the items in cooking appliances and serving utensils tactile discrimination but they were not able to identify two categories of the S.T.I i.e. fresh flowers and plants. All the subjects identified Fresh flowers (Rose, Marigold, and Jasmine) and plants (Eucalyptus, Peepal, Banyan, and Araucaria). Only 10 subjects identified Tulsi.

The Coins of Rs. 1, 2 and 5 were identified by the entire sample, but they were not able to identify currency Notes (Rs. 2, 5, 10, 20, 50 & 100) as they were confusing one currency note with another. All the respondents identified all the items in the miscellaneous category. For identifying plastic Glass, Steel along with sense of touch, tapping them with finger also used the sense of hearing. For identifying Match Box sense of smell along with touch was also used. Rest of the items (safety pin, purse, and belt) was identified only by tactile discrimination.

It was also revealed by the results that the respondent identified maximum items of the S.T.I in 3-6 seconds. These children took more time in identifying those items with which they were less familiar. Another important finding of the study was that the subjects showed confidence when they identified an item correctly where as they appeared confused when they failed to identify an item.

### IV. DISCUSSION

Activities of daily living comprise everything entailed in human life and relationships. These are the basic activities necessary during an ordinary day. There are hundreds of activities which a person performs from the moment right he wakes up in the morning till he goes to sleep at night. Sighted persons normally learn to perform these activities by themselves by seeing other persons. As visual discrimination is involved in these activities, a visually impaired person cannot learn the same on his own and thus required training daily living skills. The present study revealed that the sample was not impeccable in carrying out the various daily living activities. A need was felt to train them by acquainting them with various items used for daily living. For this purpose; a Sensory Training Inventory (STI) was devised and administered on the subject. It is indicated in previous studies that visually impaired children learn more science concepts when taught through specially prepared teaching learning materials (Muruganadum, 1990).

Touch is the only original special sense for those who are born blind and there are only two different kinds of tactual perception i.e. Synthetic touch that involves tactual observation of objects that are small enough to be enveloped by one or the both hands. Analytic touch involves touching various parts of an object and then mentally constructing these parts (Cruickshank, 1971). These findings were consistent with the results of present study that showed that Maximum items of STI had been identified through tactual discrimination, in the present study. It had also been revealed that the small items like pen, eraser etc. had been

identified by touching with finger tips and enveloping them in one or both hands whereas large items like cooking gas, kerosene oil stove etc. have been identified by touching different parts and then mentally constructing them. It was observed that all of them were good. Braille readers and this ability of these children had improved their tactile discrimination ability as evident from various previous studies that blind Braille readers outperformed their sighted counterparts at hyper acuity task using Braille like dot pattern (Grant et al., 2000).

It is evident from the results that most of the shapes had been identified by the subjects. These results were consistent with the previous studies that revealed that good Braille readers are better than poor Braille readers on several tactual discrimination tasks including judging differences among shapes, texture, and thickness (Willagen et al, 2005) These children identified most of items in Fresh fruits category taking olfactory cues and using tactual discrimination and none of them felt the need to taste them. It is not because they have lowered thresholds for sensations in touch or smell, often referred to as "Sensory Compensation," but through concentration and attention they learn to make fine discrimination, (Cruickshank, 1971).The visually impaired children are better in identifying the textures than sighted children. The tactile discrimination ability increases only by practice and not by the nature and degree of blindness. (Mani and Akkamma, 1994). The present study also revealed that the subjects used tactile discrimination for identifying different texture, fabrics, electric goods etc. The sense of taste and hearing were also used but to a lesser extent. Subject, who had acquired blindness in the present study, identified the items of STI quickly than the others, who were congenitally blind. Warren (1984) found that individual with acquired visual impairment had an advantage over the congenitally blind because of the visual frame of reference acquired through previous visual experiences. They can relate their new reliance upon non-visual modalities to previous visual perception. It had also been found that the age of admission duration of stay did not have any significant impact on the ability of the subject to identify the items of S.T.I.

#### V. SHORT TERM INTERVENTION

On the basis of results obtained after administration of STI a short-term intervention was planned by the researchers to acquaint the sample group with those items that they failed to

identify earlier. Though an informal intervention was simultaneously given while administering STI, formal intervention was also planned for 2 days, 90 minutes each day. The planning of the intervention was done beforehand. The planning included number of sub items for which each subject needed intervention. The main items included in the plan were beans, pineapple, compass, semicircle, rectangle, silk, inland letter, post card, paperclip, lighter, fork, hockey stick, racket, shuttle cock, araucaria, tulsi and currency notes. Subjects were given one item at a time and descriptions were given simultaneously. Follow-up of the intervention revealed that the subject were able to identify all those items for which intervention was given.

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