



Texas School for the Blind and Visually Impaired
Outreach Programs
www.tsbvi.edu | 512-454-8631 | 1100 W. 45th St. | Austin, TX 78756

Active Learning Study Group

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Presented by

Kate Hurst, Statewide Staff Development Coordinator

hurstk@tsbvi.edu

Matt Schultz, Deafblind Education Consultant

schultzm@tsbvi.edu

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Active Learning Study Group for November, 2014

Early Learning Step by Step: Chapter 4

Learning Co-ordination of Movements

- Movements become meaningful when child receives tactile, auditory, olfactory and visual responses.
- Later these movements must lead to more specific results to remain meaningful; co-ordination of two or more movements becomes crucial.
- Co-ordination of head and hand movements is crucial to gaining head control. Co-ordination of arm and leg movements is pre-requisite for ability to sit unsupported, to crawl, to stand, to walk, to run, to dance.

Learning Midline Organization of Hands and more Advanced Hand Movements

- Simultaneously using both hands at midline is crucial in achieving head control and for learning to play constructively and a number of other activities.

Learning Midline Organization of Hands by the Infant without Disabilities

- This sequence starts very early; the fetus brings its hand to mouth begins sucking the hand.
- A few weeks after birth the baby becomes aware of looking at one or the other of his hands, combining the information from visual and kinaesthetic modalities.
- Later he begins to grip his own hand, bring objects to mouth, holds object in one hand while banging it with the other.
- At eight months he will rotate held objects using both hands while noticing the change of appearance that results from the rotation.
- As his ability to use both hands increases, so does his muscular strength. All from these exploratory hand movements that are linked to vision.
- This midline organization eventually leads to performance of activities such as eating, dressing, washing, carrying heavy things etc.
- Ability to pour liquid in a cup is dependent on child's ability to rotate hand and control his movements while pouring as well as stopping movements when the cup is full- All skills that develop through midline organization.

Learning Midline Organization of Hands by the Child with Visual Impairment or Multiple Disabilities

- These children need environmental intervention in order to have the opportunity to establish midline organization of hands.
- Blind infant, like sighted infant will bring his hand to mouth. However, he is unable to combine this movement with another sensory modality. Without the opportunity, the task will become familiar and no longer pose a challenge or interest. The movement stops.
- Before arranging the environment to facilitate movement, first observe the child. What do his movements look like? Can he spread his fingers? Clinch his fist?
- Appropriate intervention may be to arrange surroundings from which the child can combine tactile or auditory experience with hand movements (i.e. having objects hanging over hands or placed so near them that he is motivated to move his fingers and later grasp at them).
- Once he can grab, environment must allow for him to be able to bring object to mouth.
- For some, learning midline organization of hands can be facilitated by utilizing emerging kinematic movements: When feeding the child, provide them with a spoon by means of a "buncher". While being fed the child receives sensory stimulation in the lips and tongue and by moving his mouth. Kinematic movements of opening and closing hand or moving hand in the direction of the mouth may emerge. With spoon in hand, he may become more aware of it and the feedback that it could provide and become encouraged to use it during his feeding time.
- Lying prone over a Support Bench, it becomes easier to use midline organization. Provide material from which he can gain tactile, auditory or visual experience (if possible). Possibly a scratching board, a Sensitar, a tray with marbles, a position board, a sound box, or whatever the child is most interested in.
- VI kids often do not turn objects thus do not often rotate their hands. Toys that make sounds when turned are great for practicing this skill. For example; a balloon with beans, a vibrating tool, a bottle with marbles, containers for pouring water while having a bath.
- Include interesting objects that are too big to be handled with one hand as well as objects that are too heavy. This encourages child to tighten muscles when exploring.
- Include objects with holes to help learn pincher grasp and to use fingers to explore surfaces, edges and shapes.
- When child begins to move objects from hand to hand, toys that can be separated should be made available. For example; two nail brushes, boxes or tins with lids, blocks connects to Velcro or magnets etc.
- Objects that make sounds when banged together encourage the child to use both hands.
- The better these hand movements develop the more able the child will become in eating his food or pouring liquid as well as getting dressed.
- Important note: When observing improvement in the child's ability to display midline organization of hands, rearrange the environment so the child is encouraged to learn more.
- Also important to provide opportunities to generalize skills in other settings; while bathing, while drinking and eating and while undressing.
- Transference of skills help the child to make the connection between skills and activities and feel a sense of mastery and independence!!

Achieving Head Control

The Infant without Disabilities

- Begins working toward head control in the first month of life when the infant lifts up her head from the prone position.
- Ability to see and hear motivates her to turn head from side to side in prone and supine positions. These movements result in muscle strength in the back and neck that is necessary for head control.
- Full control over head movements is established at five months.

The Child with Vision Impairments or Multiple Disabilities

- Lack of sight or low vision means that in order to learn to hold her head up the child needs opportunities to perform activities based on kinaesthetic-tactile or kinaesthetic-auditory or kinaesthetic-olfactory experiences to replace the kinaesthetic-visual experiences.
- MI child needs environmental intervention to be motivated to lift head up and to turn head from side to side.
- Possible interventions: prop the child up with blankets; provide a tray with marbles or ping-pong balls. Maybe a Sound box that only plays when the lid is not pressed. Add tasty treats or different smelling materials to the plates.
- If the child is vocalizing, place him in a prone position on a Resonance Board or Support Bench. Place near him a container that will allow for good echo.
- Learning midline organization of hands and coordinating this ability with the ability to move the head become crucial pre-requisites for learning to sit, stand and walk.

Learning to Sit Unsupported

The Child without Disabilities

- The pre-requisite for learning to sit is the establishment of co-ordination between arm and leg movements both in supine and prone position, and achieving the ability to turn from supine to prone position.
- Babies learn this by pulling their legs up, grasping their feet.
- When they drop objects, they use vision to locate them before reaching out to grab them. Developing the muscles and co-ordination needed to roll over.
- When seated, they will start to pull his knees under his stomach and stretch his legs. Repeating hundreds of times resulting in decreased curvature of the spine. He also learns to lift his head up along with the upper part of his body while supporting himself with elbows, then hands and arms.
- These movements lead to the ability to stand with support. When standing, the infant will move slightly forward and backward, developing more strength in the back, decreasing the curvature of the spine.
- The ability to maintain stable sitting depends on having sufficient strength in the muscles of the back, arm and legs as well as a certain degree of development of the curves of the spine.

The Child with Vision Impairment or Multiple Disabilities

- Misses all of the above outlines opportunities to develop the movements and strength needed for unsupported sitting.
- Environmental intervention can facilitate this learning.
- Example: 19-month blind child. Placed in a supine position in a net hammock with the Essef Board placed near his feet. He explored the board with his feet, later with his hands and fingers. Eventually, he pushes off the board the swing himself.
- Later, he lifted the board with his feet, bringing it to his hand for tactile exploration.
- One month later the boy was able to move from supine to the sitting position.
- Another way of motivating a child to co-ordinate movements of hands and feet could be to expose them to the Little Room.
- His hands and feet are able to reach the sides of the room, creating auditory feedback when touched.
- If interesting objects are hung within reach of the child, he may start to use both hands to handle one or more of the objects.
- If the ability to sit has not been reached by the age of two, the child will have a great deal of difficulty doing so without intervention.
- Placed in a prone position on top of a Support Bench and provided with objects underneath both hands and feet, the child has the opportunity to experience feedback from accidental as well as deliberate movements.
- Introduction to the Support Bench must be carried out over half an hour every day for one week.

Learning to Stand and Walk Independently

- The ability to walk gives a person a feeling of self-esteem and independence.

The Infant without Disabilities

- Five months before birth the fetus commences to move its legs. Also bending and stretching legs.
- Pressing feet against the uterus as he gets bigger, he learns to tighten muscles.
- Achieves muscle strength through daily exercise
- After birth, he kicks and braces legs against surfaces
- Requires several months of practicing leg movements before he has muscle strength necessary for weight bearing and walking
- In supine position, he moves his legs when changing.
- Enjoys being held in the standing position. Allows him to hear and see better.
- Drums feet up and down when having an excited auditory or visual experience. .
- At 7 months old, he can balance on four extremities.
- Later he will reach for toys when on all fours, learning to balance on three points. At this point he is almost ready to crawl as well as move from lying to sitting positions.
- After 15-17 months of displaying feet and leg activities every day, the 10-12 month old is ready to bear weight and learn to balance themselves while standing.
- At this stage, he will hold onto furniture while pulling himself up to standing position. Often sitting down immediately and repeating.
- The he will begin to let go of the furniture before quickly grabbing it to remain balanced. Then he will use the furniture to walk sideways along to surface.

- One of the greatest advantages to walking is that it gets them nearer to something or someone that they want. The movement is motivated by vision.

The Child with Vision Impairments or Multiple Disabilities

- The first missed step may be that these infants do not continue the kicking or bracing of feet he learned while still a fetus.
- The reason may be lack of sufficient auditory or tactile feedback or lack of co-ordination between arm and leg movements.
- Lack of feedback results in decreased movement.
- Therefore, we need to place the infants near a surface where they can get sufficient auditory feedback while kicking.
- Resonance platform would be great for lying on.
- Objects that could provide tactile and auditory experience should be placed near hands and feet- packing paper, corrugated paper, leaves etc
- Heavy objects placed near his feet would allow him to develop muscle strength and to utilize different leg movements.
- Provide opportunities for the child to move the hands and the feet at the same time- co-ordination of movements.
- They need opportunities for “joyful activities in the upright position”. Provide motivation to stand and walk. – Baby bouncer harness, Resonance Board placed on top of four Essef Boards.
- Essef boards should be used every day.
- Swimming pools are great for learning the movements needed to walk.
- Many blind children exhibit the stereotypical behavior of jumping while holding onto furniture. Introducing new things to jump on may encourage them to move on to the step of experimenting with keeping balance.
- Play games where you support the child while leaning left, right, forward and backward. Experimenting with gaining and losing balance.
- Blind child has never seen anyone walk unsupported.
- Only becomes motivated to cross a room when he can localize sound from stationary sources.
- Has to learn this skill after learning to crawl and again after learning to walk.

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Figure 1 TSBVI logo.



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Figure 2 IDEAs that Work logo and OSEP disclaimer.