

The Comprehending Hand

Active Learning and
Fine Motor Skill Development

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Goals for Today

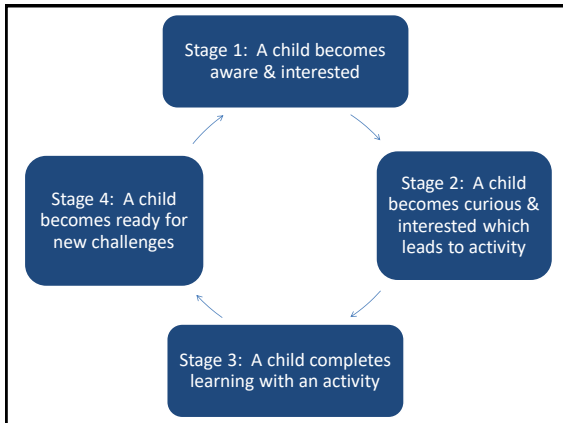
- To understand how an infant develops the ability to grasp
- To understand how cerebral palsy and other disabilities can influence a child's ability to grasp & play constructively
- To identify Active Learning strategies and activities that encourage the development of grasp and the ability to play constructively

A Child is a Learner!

- A child learns throughout life.
- A child learns gradually according to his/her
 - Physical capacity
 - Cognitive capacity
 - Emotional capacity
- A child learns no matter how old he/she is
- A child learns no matter what type of special need has effected or is still effecting the child's ability to learn.

A Child is a Learner!

- Learning is therefore only restricted by
 - A lack of learning opportunities
 - A poor environment
- A child who is unable to grasp
 - Is unable to make full or sufficient use of the impressions he/she is experiencing



The Development of Grasp

- | HAND POSITION/GRASP | ACTIVITIES OF THE HAND |
|---|--|
| <ul style="list-style-type: none"> • In utero <ul style="list-style-type: none"> – Development of hands in fluid environment, weightlessness | <ul style="list-style-type: none"> • Movements of arms/hands • Hand to mouth • Pushing against uterine wall • Open/close fingers • Hand to hand |



Infants With a Thumb-in-Fist Posture, Michael Jaffe, Yoram Tal, Hussein Dabbah, Leonid Ganels, Ayala Cohen, Lea Even and Emanuel Tirosh: Pediatrics 2000; 105:e41 DOI: 10.1542/peds.105.3.e41

The Development of Grasp

HAND POSTION/GRASP

- 0-1 Month
 - Reflexive hand
 - Holds hand tightly
- 2 Months
 - Reflexive grasp
 - Holds hands unfisted half of the time

ACTIVITIES OF THE HAND

- Movements of arm/hand
- Hand to mouth
- Scratching motion
- Grasp & let go
- Releases objects without awareness



Image: respectfulcaregiving.org

HAND POSITION/GRASP	ACTIVITIES OF THE HAND
<ul style="list-style-type: none"> • 3 months <ul style="list-style-type: none"> – Voluntary grasp begins – Hands un-fisted • 4 months <ul style="list-style-type: none"> – Reaches – Engages hand in supine – Clutches objects – Retains objects • 5 months <ul style="list-style-type: none"> – Transfers object h to h – Palmer grasp with thumb adducted 	<ul style="list-style-type: none"> • Puts hands together • Grasp & let go • Grasp & keep • Release objects purposefully • Uses thumb while grasping • Turns wrist • Bangs on items with fist • Crosses midline • Grasps with both hands • Pushing motion/batting

3-5 Months Old

- Provide opportunities for pushing, batting, scratching to explore environment
- Motivating feedback will provide further movement
- Encourage any kind of grasp, grasp and release, and grasp and keep
- Use appropriate materials and Active Learning environments to promote independent engagement

6-8 months




Images from goldenreflectionsblog.com

HAND POSITION/GRASP	ACTIVITIES OF THE HAND
<ul style="list-style-type: none"> • 6 Months <ul style="list-style-type: none"> – Immature raking of small pellets – Transfer objects h to h • 7 Months <ul style="list-style-type: none"> – Radial palmer grasp with cube – Rakes pellet into palm – Pulls peg out • 8 Months <ul style="list-style-type: none"> – Holds object in each hand – Holds pellet between thumb and curled index finger 	<ul style="list-style-type: none"> • Bangs with toys • Grasps feet • Makes shaking motion • Holds two objects • Bangs objects on table



9-12 months

images from
goldenreflectionsblog.com and
photographersdirect.com

HAND POSITION/GRASP	ACTIVITIES OF THE HAND
<ul style="list-style-type: none"> • 9 months <ul style="list-style-type: none"> – Radial digital grasp with cube – Inferior pincer grasp with pellet • 10 months <ul style="list-style-type: none"> – Isolates fingers & pokes – Clumsy release of cube into box – Pincer grasp • 12 months <ul style="list-style-type: none"> – Neat pincer grasp – Stacks 2 blocks – Precise release of cube into box – Clumsy release of pellet into bottle 	<ul style="list-style-type: none"> • Handling of objects • Releases objects into air • Rotates the wrist • Throws toys appropriately • Picks up objects within reach • Pulls heavy objects • Bangs objects together

HAND POSITION/GRASP	ACTIVITIES OF THE HAND
<ul style="list-style-type: none"> • 14 Months <ul style="list-style-type: none"> – Stacks three blocks 	<ul style="list-style-type: none"> • Holds crayon • Stacks
<ul style="list-style-type: none"> • 16 Months <ul style="list-style-type: none"> – Scribbles – Precise release of pellet into bottle 	<ul style="list-style-type: none"> • Puts object inside one another • Building with objects

Conclusion
<ul style="list-style-type: none"> • All children with multiple disabilities, including Autism, Cerebral Palsy, Cognitive Delays, and Visual Impairments • Activities presented at current developmental level and provided new appropriate challenges • No hand-over-hand to participate • One children can grasp they need to utilize their abilities to engage in more constructive activities

Constructive Play
<ul style="list-style-type: none"> – The ability to manipulate elements of the environment to generate something new – To use objects and surrounding to create



How Does Constructive Play Develop?

- Learning to put one object inside another.
- Move objects from one hand to another
- Places objects between spaces
- Isolates a finger
- Finds tiny holes in objects
- Place small objects into openings
- Remove objects from containers
- Placing objects back into containers

How Does Constructive Play Develop?

- Moving objects from one container to another
- Placing objects on top of one another
- Stacking with two objects at 1 ½ years of age
- Complex stacking and building 2+ years
- Adjust the position of an object depending on its surroundings →
 - work a shape sorter or puzzle, build a tower with blocks, and snapping beads together.

Key Elements to Constructive Play

- Putting objects into another one
- Separating simple construction objects
- Playing banging & sequencing games
- Playing pouring & quantity games
- Emptying a box with toys & objects
- Filling a box with toys & objects

Key Elements to Constructive Play

- Stacking objects
- Putting two or more objects together
- Arranging objects in particular orders
- Using tools for constructing new devices

Remember the Dynamic Learning Circle!

- Identify and eliminate barriers
- Fill in missing gaps
- Promote continued learning

Active Learning Activities should ALWAYS

- Reflect current developmental level of the child
- Allow for enough time for repetition (daily, weekly, monthly and even yearly.)
- Include materials that reflect the physical, sensory and emotional needs of the child
- Take into consideration a child's likes and dislikes

Putting Objects Inside One Another

- Hand in mouth
- Hand in hand
- Hand between bars or in holes (slots in crib)
- Hand in containers, under blankets/cushions
- Holding object, object in mouth

Children are learning about size, shape, texture, taste, temperature, smell and construction of objects

Learning to Separate

- The basis for putting things together
- Once a child can move objects from hand to hand, he/she must be given objects that separate
- Remember that pouring/emptying is also separating
- You can create items that come apart by hanging 2 items together
 - ie: 2 spoons attached with a ring or elastic

Learning to Separate

Simple take apart materials using rings/zipties/elastic:

- Two nail brushes stuck together
- A bottle brush in a bottle
- Keys hanging together in a ring
- Measuring cups or spoons on a ring
- Magnetic items
- Velcro items, boards and vests
- Containers of all shapes, materials and sizes with and without lids

Learning to Put Together

- Initially, adult will need to
 - refill container
 - reassemble object/attach the lid
- Allow child to feel, hear, see, imitate
- Avoid using hand over hand techniques
- Encourage independent engagements instead of controlling a child's activity

Learning about Quantity

- Begins early
 - Kicks legs
 - Bangs on object/short breaks
 - Holds hand fist as one or separates fingers into 5
 - Few vs. many toys sucking, opening & closing fingers, grasping own hands
- 1-2 years old
 - Holds more than one object in hand
 - Awareness of counting by interacting with multiples

Learning about Quantity

- Create environments where multiples are available
- Little room - hang items in groups of at least two or three
- Position boards - items of many shapes and sizes
- Filling containers - various balls, sticks, cups, plates, tubes, etc.
- Velcro or magnetic board
 - Adding/removing = addition/subtraction

Purpose of Banging Games 8 Months to 2 Years

- To facilitate understanding of auditory qualities of objects/surfaces
- To enhance babbling and vocalizations
- To enhance development of muscle strength in the arms
- To enhance knowledge about quantity
- To facilitate learning how to use a tool
- Precursors for using a cane for ambulation

Purpose of Banging Games 8 Months to 2 Years

- Need to observe child and decide what kind of banging game is most beneficial
 - Strengthen muscles?
 - Distinguish between auditory qualities?
 - Use of a tool?
- Stuck in the stage of banging?
 - Head bang/bang face or body with hand
 - Use dynamic learning circle to use banging to explore new objects and play constructively

Learning to Stack 12 – 15 Months

- Blocks- may be uninteresting or child with Cerebral Palsy may be unable to hold
- Use items that provide auditory/tactile inspiration
 - Cups/saucers on a resonance board
- Initially adult does the stacking
 - Child will knock over
 - Eventually may try and place one item on top

Learning to Use a Tool

- Early tools
 - Spoons
 - Pacifiers
 - Bottles
 - Plates
 - Tooth brushes
 - Wash cloths
 - Pulling on a blanket to reach toy

Learning to Use a Tool

- Must explore tools in a variety of ways!
 - Held, banged, pushed, pulled, dropped
 - Is it hard, soft, long, short, bumpy, or smooth?
 - How does it taste when placed in the mouth?
 - What does it sound like when you drop it?
- Understanding the qualities leads to learning through imitation

Putting It All Together

- Constructive play requires
 - fine and gross motor skills
 - problem solving
 - flexible thinking
 - ability to plan/test ideas
 - perseverance
 - working with other

For More Information

- www.activelearningspace.org
 - www.Penrickton.com
 - patty@penrickton.com
 - www.lilliworks.org

Snap cubes, Velcro blocks,
Twig Blocks, Tactile Bricks



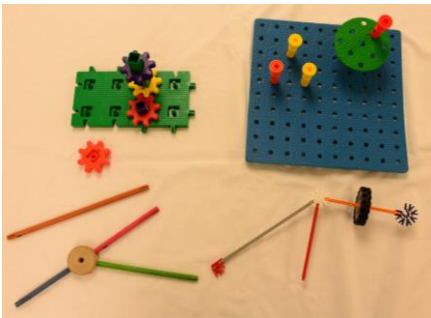
Geo Builders, Zoob Jr.,
Sqigz, Clip & Link



Soft blocks, Mega or Duplo blocks,
Prism blocks, Bristle blocks



Gears, Sure Peg Grips,
Tinker toys, Knex



Pop beads, Snap beads,
Pipe builders, Munchems



Flower blocks, Snap Stars,
Gear Builders



Magnetos, Wooden Magnetic Blocks,
Magnetic Shapes, Magnetix, Magformers

