

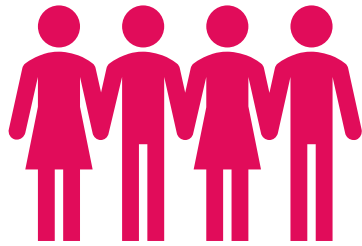


# Building an Early Tactile Foundation for Graphics Understanding

Presented by:

Leanne Grillot & Alicia Wolfe

# Zoom Poll Questions



Who is with us today?



Where are you from?

# Using the Hive's Discussion Board as a PC

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Follow reset link.
- Go to Discussion Board link in the chat
- New User: Register at [www.aphhive.org](http://www.aphhive.org)
  - Create username & password
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10/24/2023

3:00–4:30 PM (ET)

# Building an Early Tactile Foundation for Graphics Understanding

**ACVREP  
Credits**

Leanne Grillot  
Alicia Wolfe

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# Leanne Grillot



- Senior Director of Outreach Services
- Doctoral Candidate in Special Education, Visual Disabilities
- 31 years, Teacher of Students with Visual Impairments, Orientation and Mobility Specialist





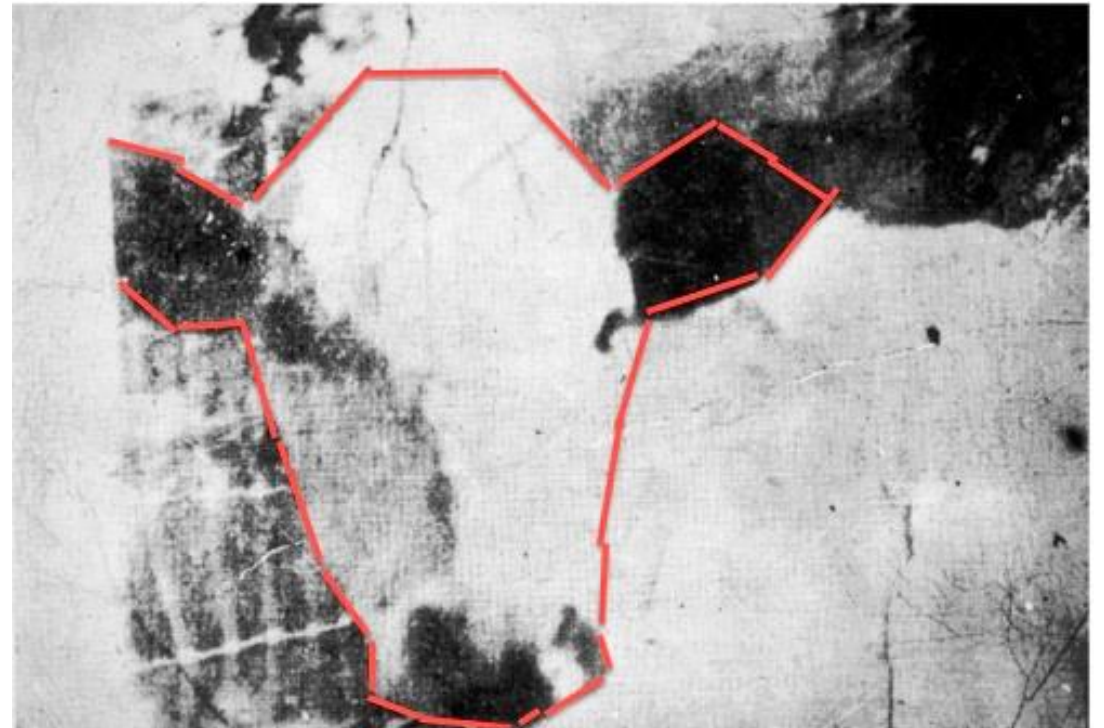
# Alicia Wolfe



- APH Outreach Specialist (SouthEast Region of U.S.)
- Master of Science in Visual Disabilities
- 25 Years, Teacher of Students with Visual Impairments



# Graphics Activity Example



# Welcome to the Tactile Journey!

2023

3:00 PM (ET)

## Tactile Graphics Literacy for Students with Visual Impairments: 4-Part Access Academy Webinar Series

- 1) Building an Early Tactile Foundation for Graphics Understanding (October 24)
- 2) Teaching Touch and Exploratory Skills to Prepare for Tactile Graphics Learning (November 14)
- 3) Strategies and Resources for the Instruction and Evaluation of Tactile Graphicacy Skills (November 28)
- 4) The Monarch: Tactile Access to Digital Learning (December 12)





# Learning Objectives

- Participants will be able to define braille literacy, tactile literacy and tactile graphics literacy for students with visual impairments.
- Participants will understand the application and foundational relationship between building tactile literacy skills and developing braille readiness.
- Given background knowledge emphasizing the importance of building tactile literacy and tactile graphics literacy, participants will apply learned knowledge and connect it to teaching methods and concept development.



# Tactile Literacy Defined

- Accessing information and learning through touch
- Emergent Tactile Literacy Skills
  - Exploratory
  - Hand/Motor
  - Concept Development
  - Surface, Size, Shape Discrimination



# Emergent Tactile Literacy Skills



- Part to Whole
- Tactile Image Exploration
- Tactile Representation
- Braille Awareness

# Braille Literacy Defined



- Accessing **written** information
- “Encompasses more than mastering “the code”
  - Braille is the medium
- Reading, writing and computing with a purpose within varied contexts
- Tool for meaningful engagement

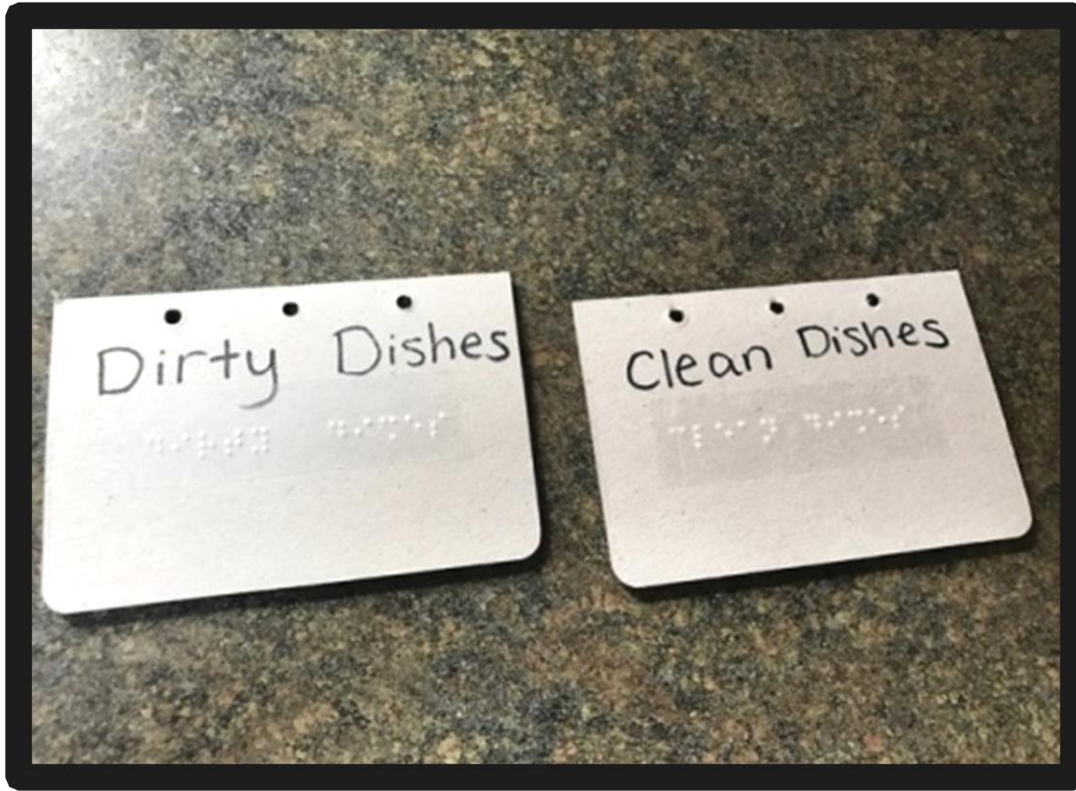


# Stages of Braille Literacy

- Emergent Literacy includes development of:
  - Concepts related to reading and writing
  - Concepts and vocabulary based on concrete meaningful experiences
  - Continued development of tactile skills



# Stages of Braille Literacy

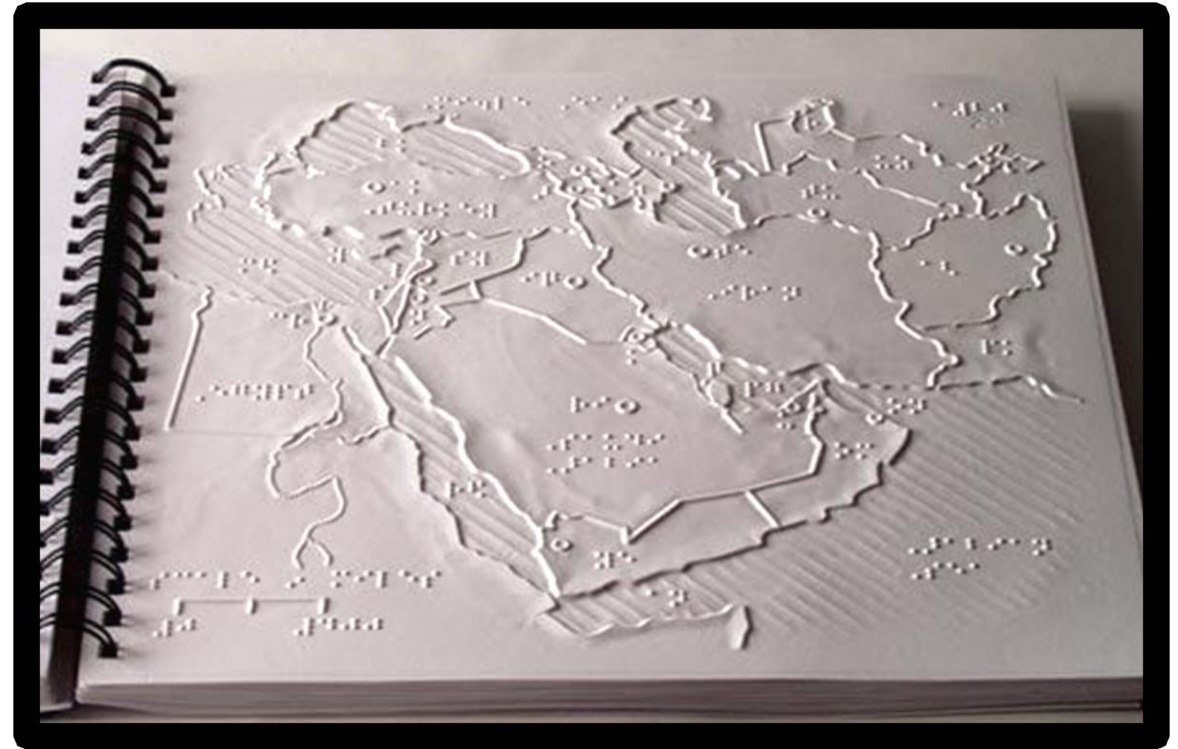


## Academic Literacy

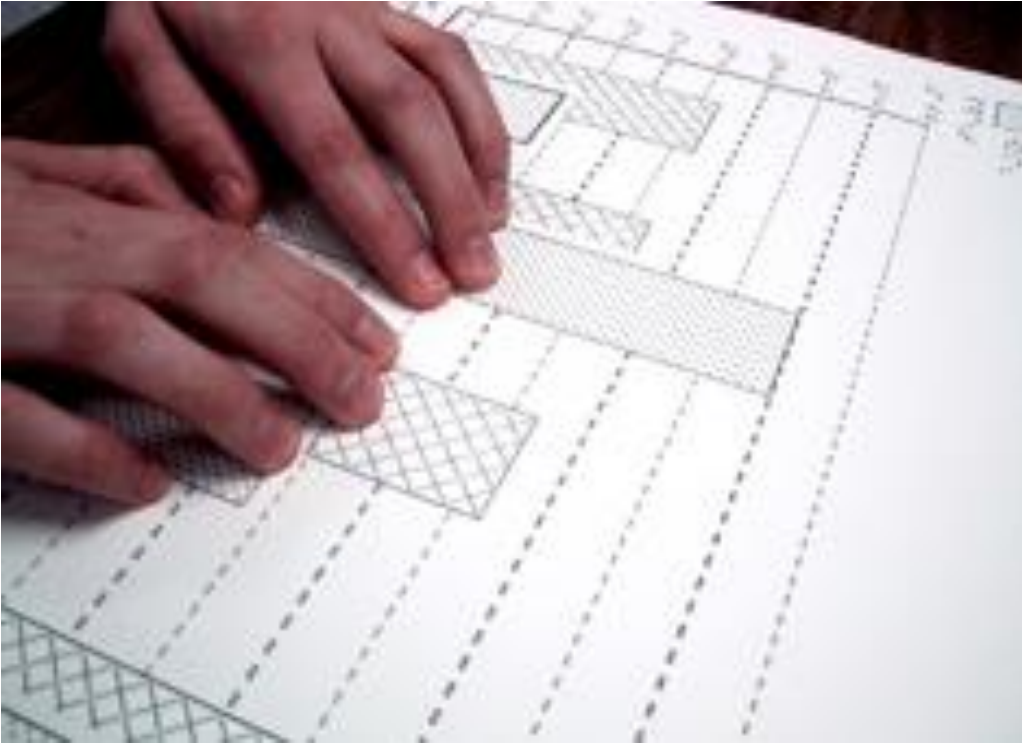
- Begins in preschool
- Learning to read and reading to learn
- Functional literacy skills are acquired

# What is a Tactile Graphic?

- The means by which non-textual information are conveyed to people who are visually impaired.
- Tactile representations of pictures, maps, graphs, diagrams, and other images



# Tactile Graphics Literacy Defined



- Extension of braille and tactile literacy
- Explicit and direct instruction is necessary
- “The ability to read, interpret and produce tactile graphics or raised line drawings.” (Curtin, 2019)



# Connection Between Tactile Literacy and Braille Literacy



# Exploratory Procedures

Pre-cursors  
of braille  
readiness



Gaps in braille  
reading skills are  
linked to a weak  
foundation in  
**tactual exploration.**



***“Children who are  
born blind do not  
spontaneously explore  
with their hands  
unless actively  
encouraged.”*** (Curtain,  
2019)

# The Connection

*“The ability to read and understand Braille is dependent, in part, on a child’s exploration or recognition of similarities and differences in objects and materials.” (Dunst, 2011)*



# The Connection



*Development of **tactile skills** happens **simultaneously** along with **concept development** and **language acquisition**. (Adkins, 2016)*



# Importance of Tactile Graphics Literacy



# Why?

- Part of the Expanded Core Curriculum (ECC) for Students with Visual Impairments
- **“Early success in exploring and interpreting tactile pictures is vital for confidence and interest in tactile graphics at a later age.”**  
(Curtin, 2019)



# Graphics and Written Language

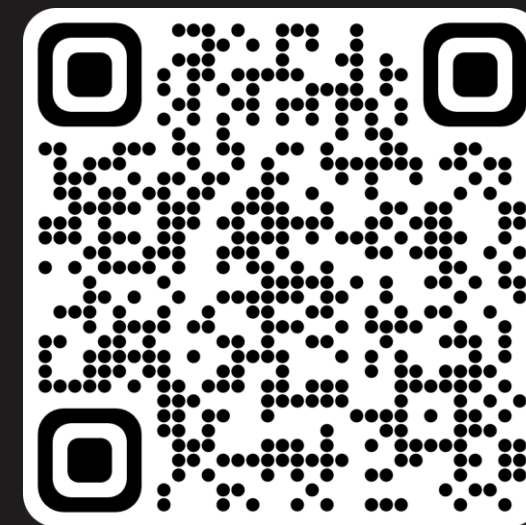
- Graphics are part of the set of symbols that make up written language
- As much as 50% of text content in today's textbooks may be presented in graphic form.
- If braille readers are to become literate, tactile literacy skills must be developed.





# HIVE Discussion Board Activity

What supports can we provide learners to facilitate the development of effective tactile literacy skills?





# An Early Tactile Foundation Begins with Concepts



# What is a Concept?

"A concept is an idea of something formed by mentally combining all its characteristics or particulars."

(Costello, 1995)



# What is concept development?



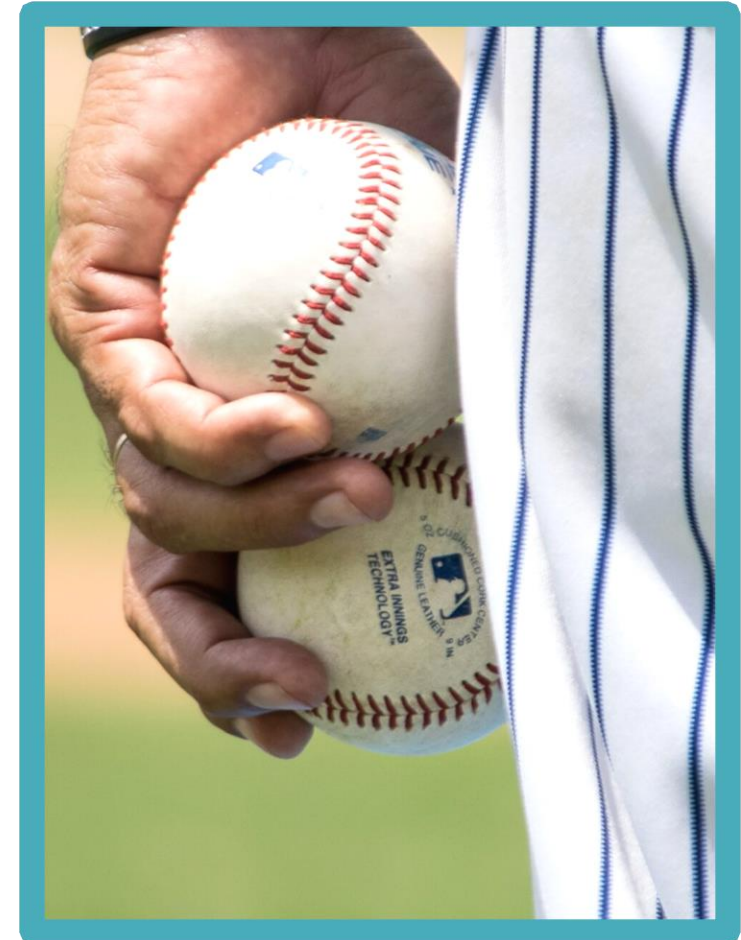
Concept development is the "process by which people learn to understand the various characteristics of objects and their relationships to one another and to themselves in the environment."

(Jacobson, 1993, p. 27)

# Levels of Concepts

- Concrete
- Functional
- Abstract

(Jacobson, 1993, p. 27)





# The Importance of Concept Development



# Process

Awareness something exists

An opportunity and desire to interact with the object

Other people supply labels for it

Ability to classify objects of different shapes, sizes, & materials that fit the concept in question



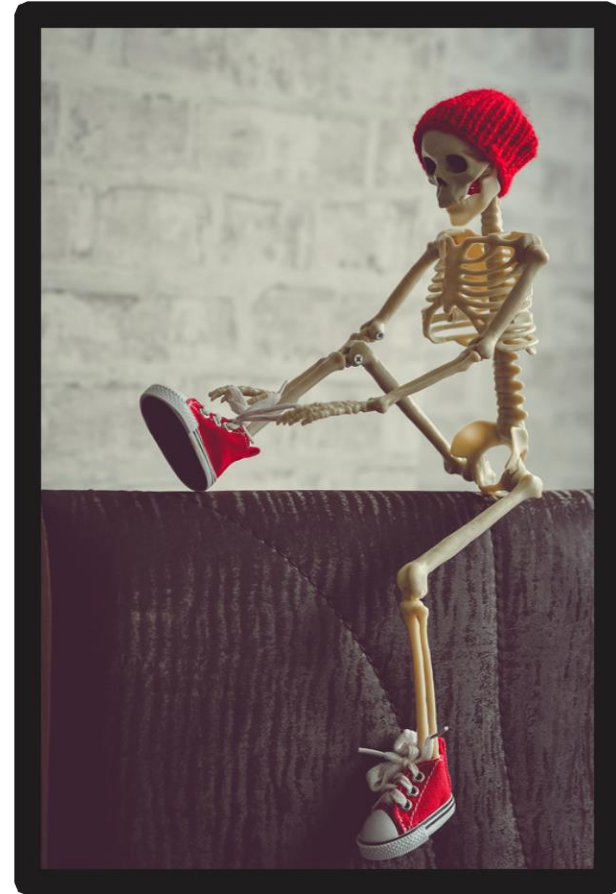
# Purpose



Concept development provides “the purpose for movement and the basis for orientation within a variety of environments.” (Fazzi & Petersmeyer, 2001)

# Development of Concepts Follows Patterns

- Simple to complex
- Gross to fine
- Functional to abstract
- Egocentric to exocentric
- Midline to lateral
- Proximal to distal
- Horizontal to vertical to diagonal





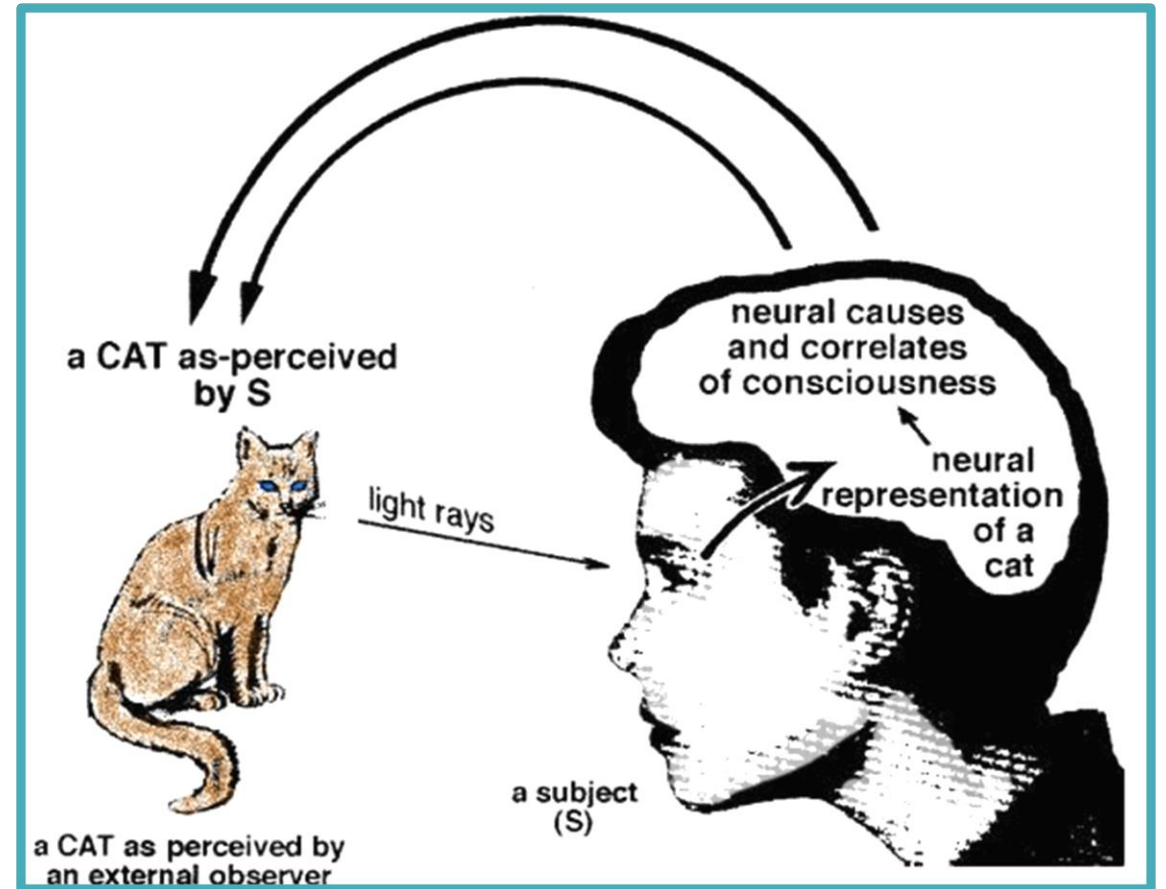
# Fill in the Gaps



- More obvious for congenitally blind individuals
- Adults and children with low vision often receive incomplete or inaccurate sensory information

# Levels of Cognition

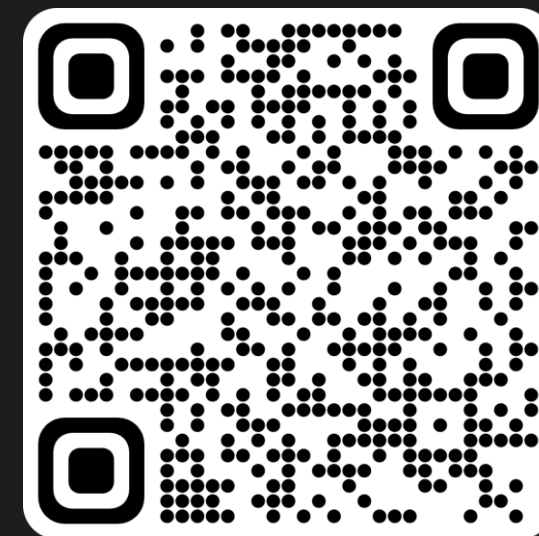
- Immediate visual perceptions = concept formation
- Integration of sequential information requires a higher level of cognition.
- Cognition, Concepts, Communication





# HIVE Discussion Board Activity

How does concept development influence the development of tactile literacy skills?



# Concept Development for Learners with Visual Impairments

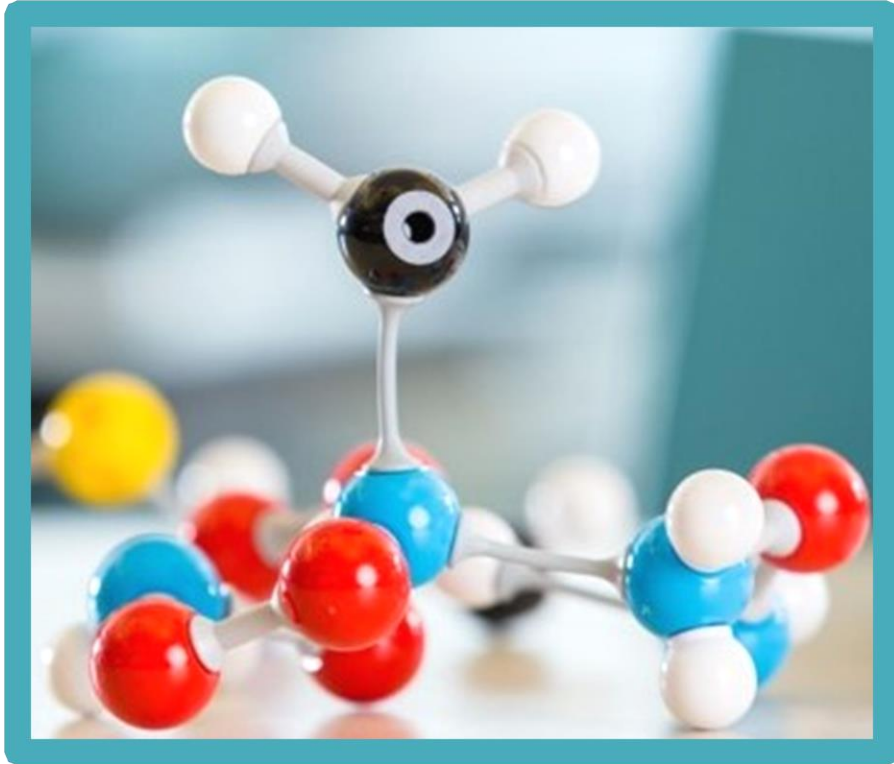




# The Tactual Learner



# Tactual Learning



- We cannot expect students with visual impairments to understand tactile graphics if they do not first have firm concepts about the object.
- Pictures reinforce our visual concept of an object – this is not the same for a student with a visual impairment.

# Challenges to Concept Development

- Incidental Learning
- Vision is a distance sense
- Unreliable Vision
- Sensory Integration
- Whole to Part Learning
- Motivation





# Concepts in Daily Life



- "Can the learner make a peanut butter & jelly sandwich?"
- At least 26 basic concepts
- We must ensure young learners with visual impairments have a broad concept base!

# Whole to Part, Part to Whole

- Learner with VI:
  - Relies on sequential observations.
  - Only part of an object can be seen or felt at a time.
  - The entire image must be "built-up" out of the components.





# Individual Differences Approach

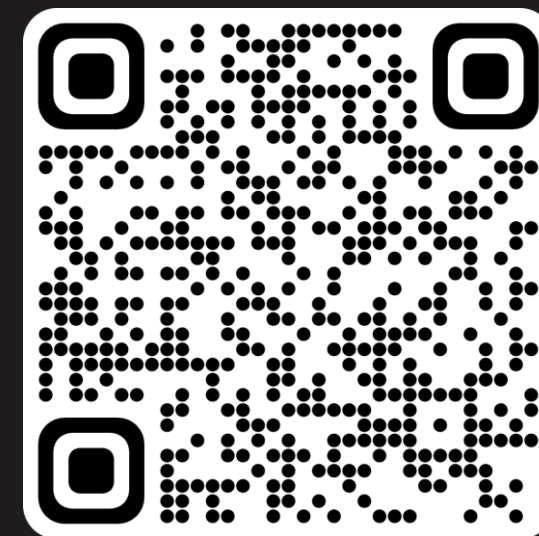
Students who are blind follow a **different path of concept development** than students who are not blind resulting in a different, neither better or worse concept of the world. (Kelley, 2001)





# HIVE Discussion Board Activity

Have you ever assumed a learner understood a basic concept, only to find out later they did not? Please share your experience and what you learned from it.



# Assessment of Concept Development



# Assessing Concept Development

- Assess levels of conceptual understanding
  - Concrete (physical properties)
  - Functional (what it does)
  - Abstract (generalize, related by relevant attributes)



# Evaluation of Concepts

- Body awareness
- Shapes
- Sizes
- Textures
- Positional Concepts
- Object Concepts





# Guiding Principles

- Talk with caregivers
- Observe learner function and play in natural environments
- Listen to learner's use of language or gestures
- Knowledge about ranges of typical development is essential
- Include all members of the learner's educational team
- Identify intervention strategies



# Tips for Teaching Concepts



# Collaborative Approach

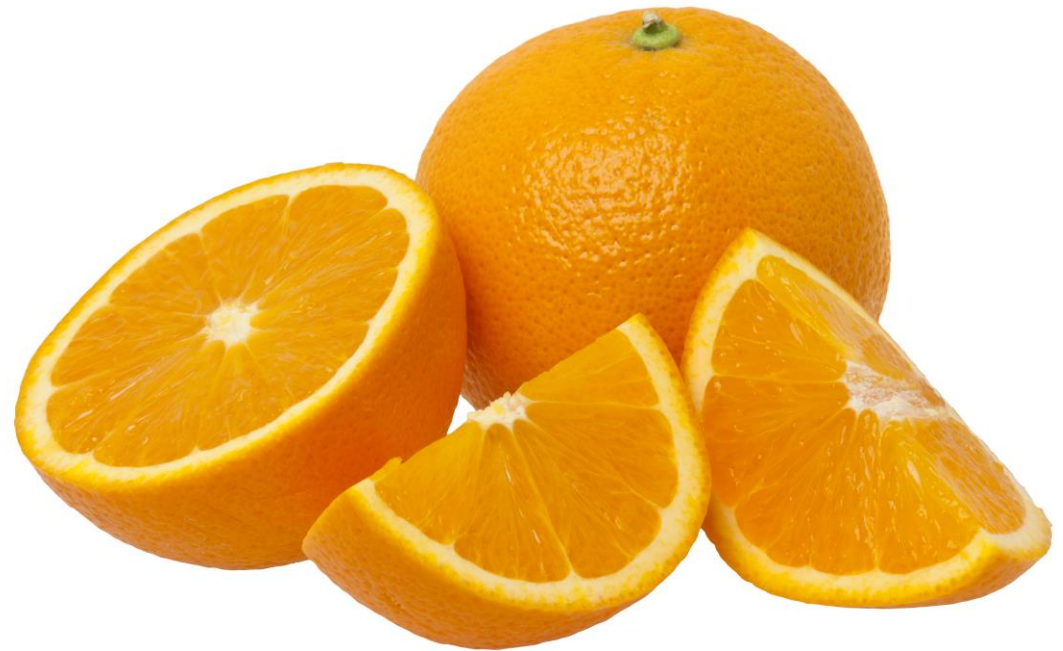
- Develop formalized teaching approach
  - Planned **teaching sequence**
  - **Meaningful** learning opportunities
- Multidisciplinary Team



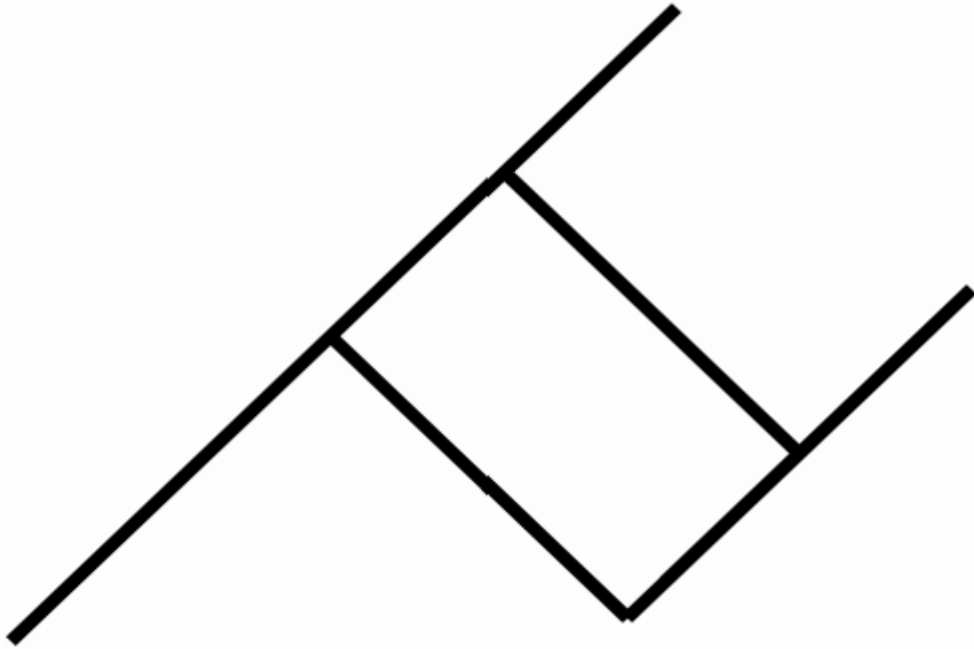
# Concrete

For young children, real objects found in their daily environment will be the key.

- Which shoelace is longer?
- What shape is this orange? It's round!
- This blanket is soft and fuzzy.
- This book is hard and smooth.



# Exposure



- Active involvement with others
- Experience, as opposed to "just" language
- Developing concepts of "chair-ness", "truck-ness"
- Beginning to identify characteristics and features of things encountered



# Experience

- Opportunity to connect different things children have experienced
- Begin to establish how they are related
- Manipulate within the environment (using manipulatives is vital!)
- Match language with experience



# Exploration

- Follows experience – a chance to independently explore and gather information.
- Requires:
  - Spatial awareness
  - Organized scanning skills
  - Part-to-whole assembly
  - Tactual discrimination (identifying symbols, selecting landmarks)
  - Language skills (labels, etc.)



# Enthusiasm

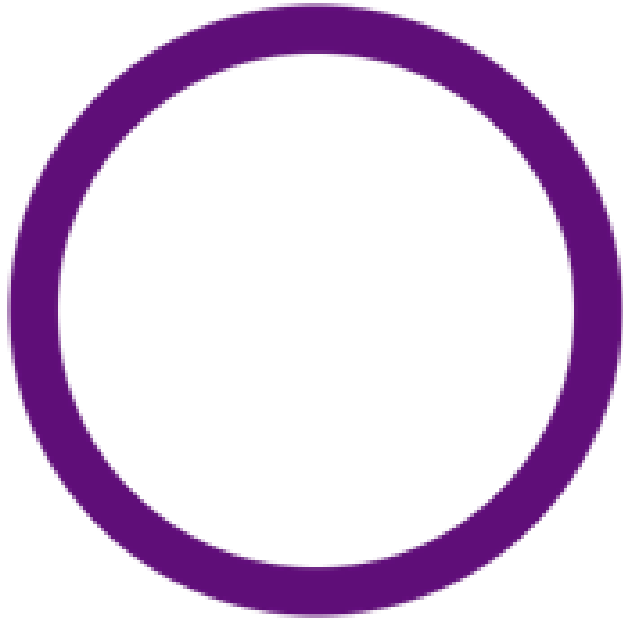


- Success at finding information independently
- Curiosity increases
- Becomes "do-er" as opposed to "done to"
- Positive self-concept

# Considerations for Tactile Graphics Literacy



# Considerations for Tactile Literacy

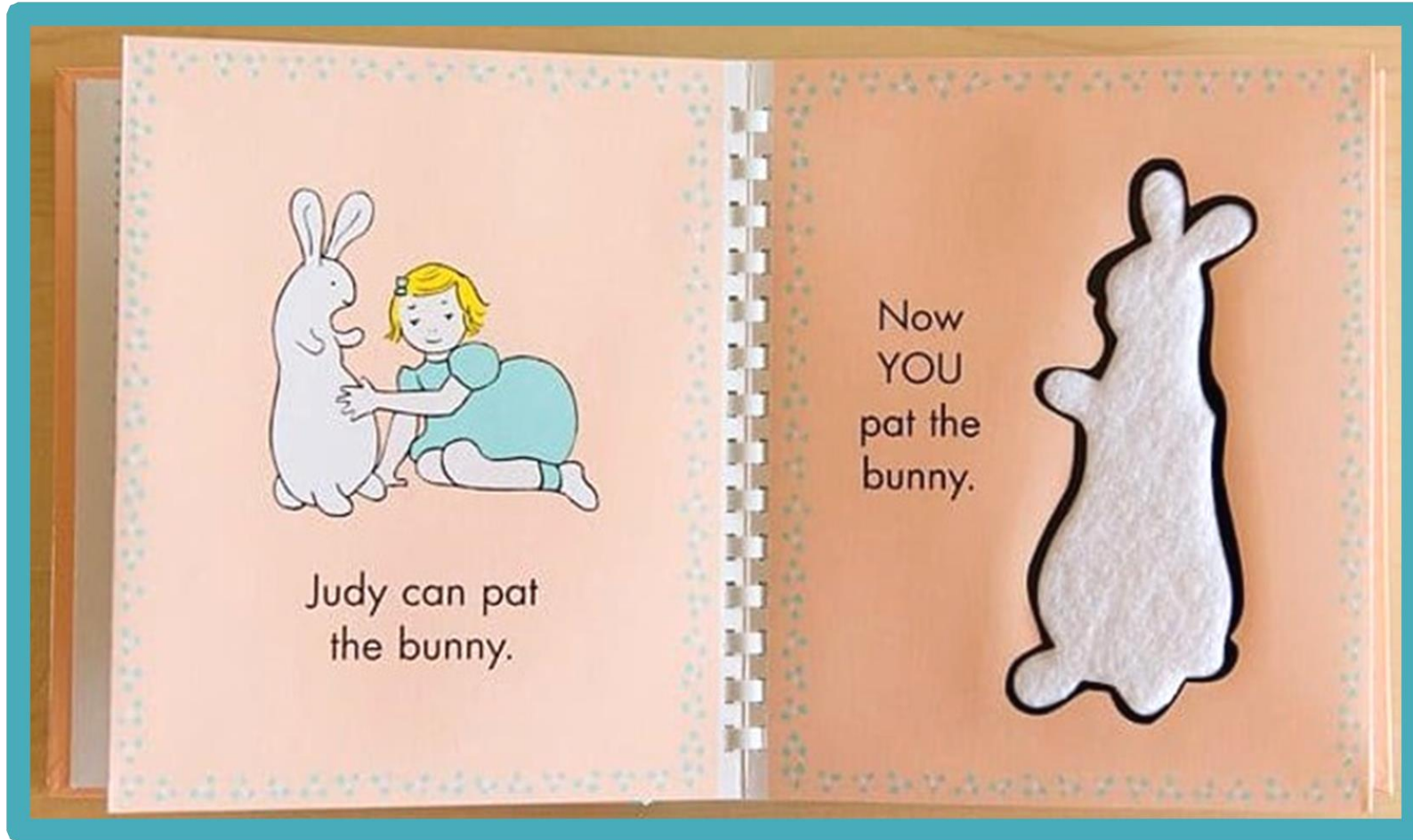


- Experience in interpreting symbolic representation has a greater effect on the reader's success.
- Verify the level of interpretation.





# Pictures and Conceptual Development



# Beginning Concept Skills

Learner should be able to:

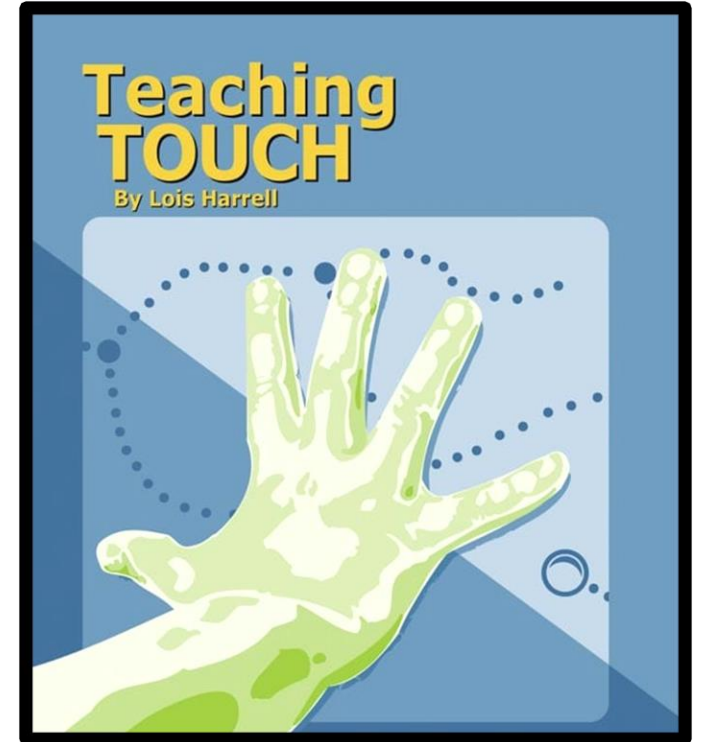
- Count
- Orient self in space
- Orient objects in space
- Orient to layout of page



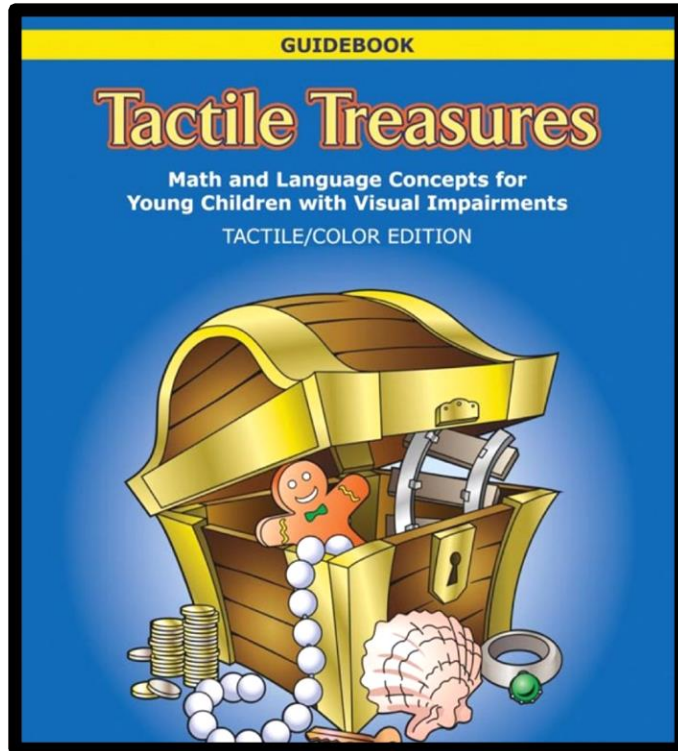
# Abstract



## Symbolic Representation of Concepts



# Manipulative



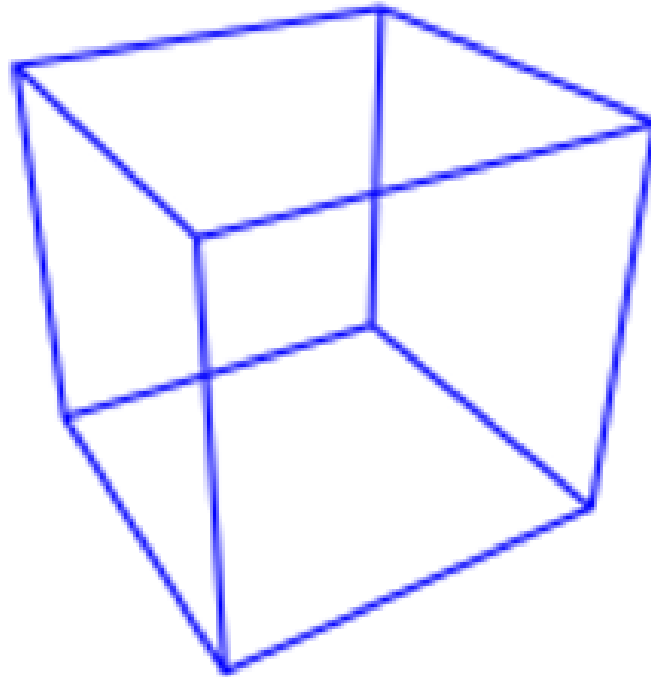
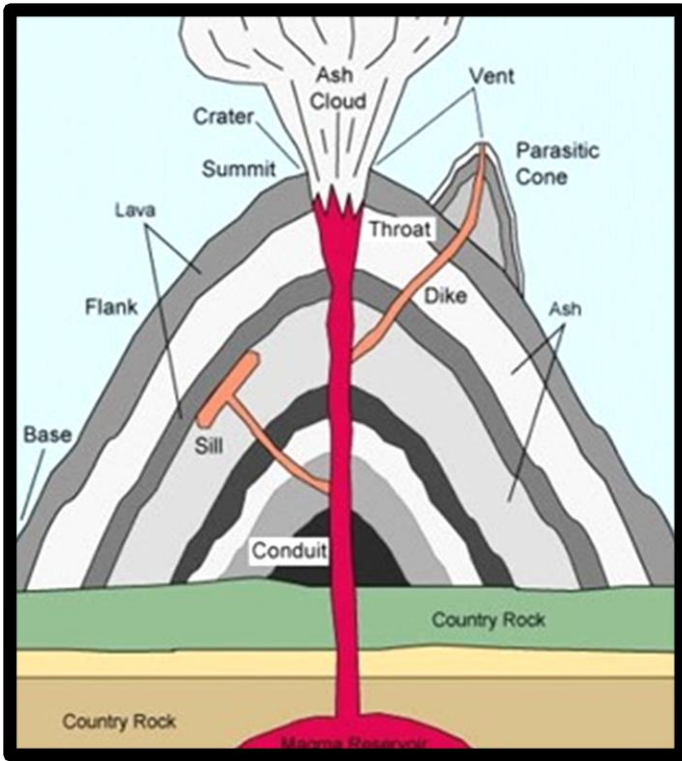
A representation of the objects can be used (2D or 3D).

- Models of items of which children have a concrete concept
- "Real object" tactile displays





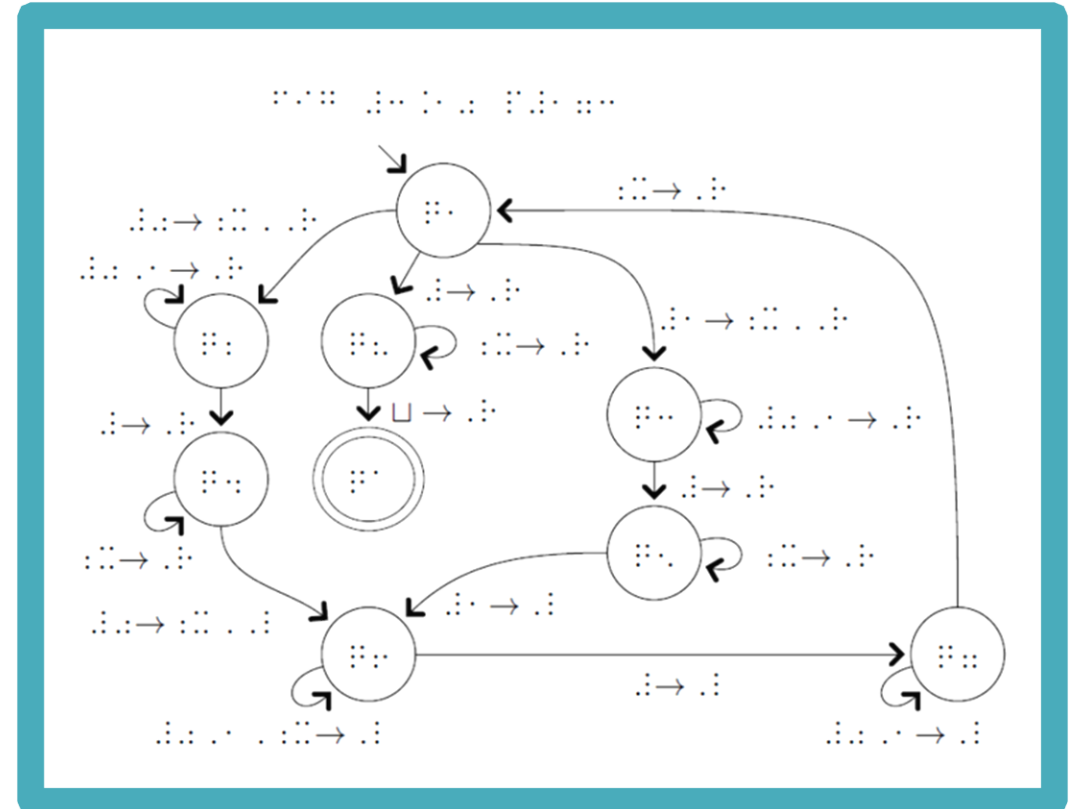
# Awareness of Different Views





# Test of True Braille Literacy

Not only do graphics provide the first step in braille literacy, but graphics allow students to continue into the most advanced academic tasks, from counting to standardized testing to physics.



# Considerations for Caregivers



# Facilitating Concept Development at Home

- Expand conversations by asking questions AND labeling.
  - Tell me more about elephants. Are they big or small?
  - Look at this rotten banana.
- Reinforce the efforts of the child's multi-disciplinary team
  - How can I help my child acquire the concept of \_\_\_\_\_?



# Facilitating Concept Development at Home



- Create accessible and active play environments
- Describe properties and functions
- Use same terminology as team



# Facilitating Concept Development at Home

- Actively involve your child to introduce concepts sighted children learn casually and incidentally
  - Leaves on the branches of a tall tree
- Facilitate sensory-motor patterns to increase interactions with environment





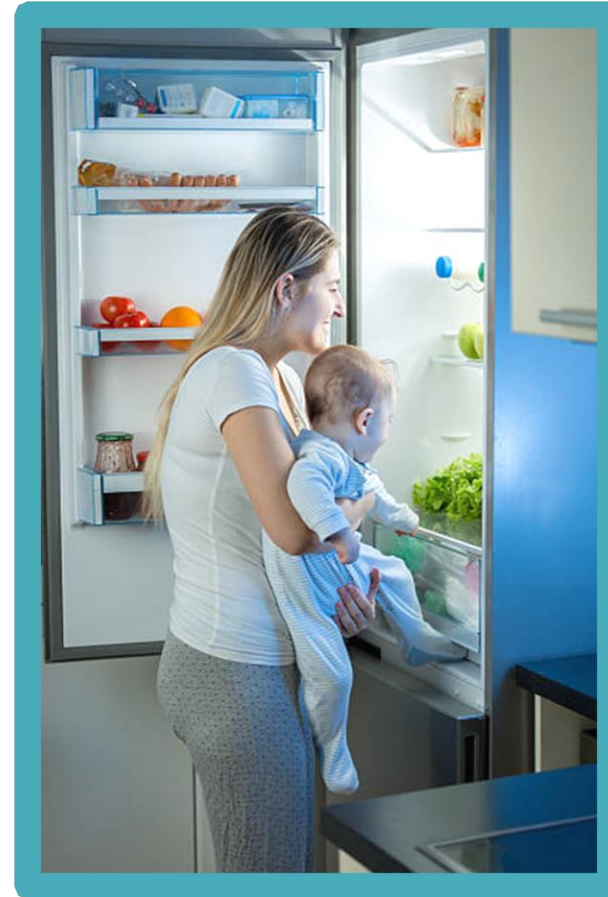
# Facilitating Concept Development at Home



- Goal:
  - “I want to do it myself!”
- Reflect:
  - Am I being overprotective?

# Become a Narrator of your Child's World

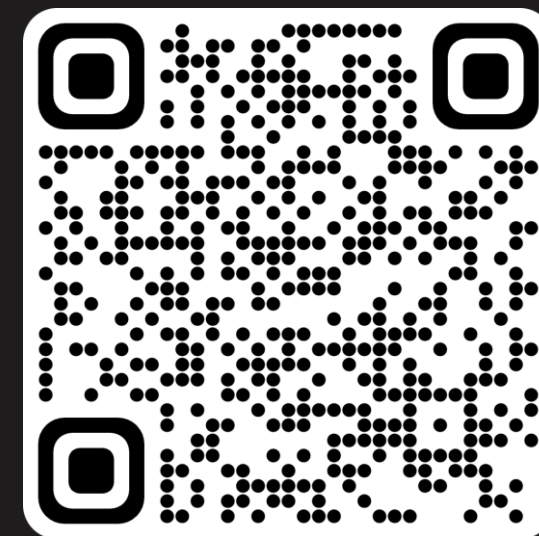
- Aware
- Can
- How
- Do





# HIVE Discussion Board Activity

How can you support parents and other family members in being active participants in the development of a learner's tactile literacy skills?



# Resources for Teaching Tactile Literacy

- [Braille Readiness Grid](#)
- [Teaching Touch Kit](#)
- [Mangold](#)
- [Setting the Stage for Tactile Understanding Kit](#)
- [Oregon Project](#)
- [Family Connect Website](#)
- [Outreach@APH.org](#)
- [Tactile Graphic Image Library](#)
- [Tactile Treasures Kit](#)
- [Because Pictures Matter](#)
- [Quick Draw Paper](#)



# Resources for Teaching Tactile Literacy

- [Wheatley Picture Maker Board](#)
- [Textured Sorting Circles and Shapes](#)
- [Building World Concepts with Tactile Graphics](#)
- [Activities for Concept Development](#)
- [Flip Over Concept Books](#)
- [Braille Literacy; A Functional Approach](#)
- [FVLMA Kit](#)





11/14/23

3:00–4:00 PM (

# Teaching Touch and Exploratory Skills to Prepare for Tactile Graphics Learning

**ACVREP**  
Credits

Jennifer Brooks



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# Thank You!

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