

# Foundations for Tactile Literacy



**A Reference Tool for the Tactile Journey,  
Emergent to Advanced Skills**

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## Preface

Living in a visually rich environment where written communication has become increasingly image-dependent over the past 5-10 years and students are constantly entertained with graphics brings the importance of Tactile Literacy to the forefront.

The ability to decode information presented as a graphic is an essential component of literacy. This document defines the skills and concepts of tactile learning, provides examples, and links products to skills and concepts.

The Foundations for Tactile Literacy: A Reference Tool for the Tactile Journey, Early to Advanced Skills can be used in a variety of ways to enhance your instructional practice. It can be used as a checklist, an informal assessment tool, or a source of data when conducting a Learning Media Assessment. This tool can also be used to assist in formulating Present Levels of Performance for an Individualized Education Plan (IEP), writing IEP goals, and progress monitoring. A final suggestion is to use the tool as a means of identifying and ordering ideal products to develop concrete educational strategies and activities for teaching tactile learning.

Advancements in technology have brought refreshable braille displays into reality, the introduction of multi-lined braille displays and other means of producing tactile graphics. It is imperative that students with visual impairments are afforded intentional opportunities to develop the skills and concepts necessary to gather information tactually and become efficient tactile learners.

Thank you to Karen Poppe, who began work in this area many years ago. Karen's work, the [Tactile Literacy Matrix](#), was the foundation that allowed us to springboard into planning for and developing The Foundations for Tactile Literacy: A Reference Tool for the Tactile Journey, Early to Advanced Skills.

## Overview

### Emergent

Spatial Awareness, Part-Whole Relationships, Symbolic Representations



- Exploratory Skills
- Hand/Motor Skills
- Concept Development
- Cognitive Skills
- Surface Discrimination
- Shape Discrimination
- Size Discrimination
- Recognize Relationships of Parts
- Tactile Image Exploration
- Tactile Representation
- Braille Awareness
- Book Handling Skills

### Basic

Part-Whole Relationships, Symbolic Representation



- Line Tracking
- Systematic Page Scanning
- Recognition of Braille Symbols
- Systematic Graphic Scanning
- Creating Graphics
- Refreshable Braille

### Advanced

Understanding Perspective, Transition from 3D to 2D



- Using Keys/Legends
- Reading Maps
- Reading Charts and Tables
- Familiarity with Digital Tools to Create Tactile Graphics
- Graphicacy Skills Using Refreshable Braille

## Emergent Tactile Literacy

The following icons are used in the table:



Haptic Skill

①



②

③

④

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Skill	Defined	Example(s)
Exploratory Skills	<p>Use of hands/fingers for exploring/manipulating and identifying familiar and novel objects, materials, etc., to promote recognition and discrimination.</p> <p>④ ③</p>	<p>Provision of opportunities to explore complex surfaces and objects with sensory feedback by fingering, banging, squeezing, pushing, rotating, dropping, etc.</p> <p>Interaction with toys that produce interesting and reinforcing consequences (plastic car, cotton ball, squeezey bear, musical box, rattle, etc.).</p>
Hand/Motor Skills	<p>Build/strengthen fine motor skills, develop tactile sensitivity and discriminatory capability, and discover how to use hands as unique, individualized tools for learning about the world. ④</p>	<p>Reaching, twisting, turning, stringing, transferring, sliding, holding, grasping, use of braillewriter for scribbling/ character and letter production</p>
Concept Development	<p>Facilitating hands-on experiences with common objects through direct experience with the world</p> <p>① ③ ④</p>	<p>Door locks, bicycle parts (spoke), car wheels, tree branches, cooking utensils, hand tools, kits and models, manipulative/tactile representations of objects too small, big, or dangerous to touch, etc.</p>

Skill	Defined	Example(s)
Cognitive Skills	Thinking and problem-solving skills necessary for systematically building conceptual understanding and awareness that leads to functional use of tactile materials ④	<ol style="list-style-type: none"> <li>1. Spatial awareness</li> <li>2. Object permanence</li> <li>3. Short-term memory</li> <li>4. Part to whole</li> </ol>
Surface Discrimination 	Compare and identify different types of textures, temperatures, and vibrations	Rough, smooth, bumpy
Shape Discrimination 	Compare and identify different types of shapes and structures	Square, circle, triangle, 3-D manipulatives or solids, combination of simple shapes to create more complex shapes or structures
Size Discrimination	Compare and identify different sizes ③ ④	Big/little, narrow/wide, long/short, tall/short, light/heavy, near/far, thin/thick, size comparisons between multiple objects (i.e., bigger/smaller)
Recognize Relationships of Parts	Part to Whole ④	Peeled orange slice - whole orange; cup handle - cup; handle - water faucet; watermelon seed - watermelon; leaf - tree; button - shirt; button - remote control; drawer - dresser; door - house; lemon - lemonade; cup of flour or sugar - cookie

Skill	Defined	Example(s)
Tactile Image Exploration	Exploring tactile images and tactile symbols with a simple structure, incorporating verbal descriptions, and using precise and coordinated movements so significant tactile information is identified to enhance understanding ④	Tactile books, shapes, 2-D representations of favorite 3-D objects, graphics for holidays or special occasions, manipulatives that can be compared to raised-line drawings, use/exploration of textures in isolation and as part of graphic representations
Tactile Representation	Creation of raised line drawings and images by student, turning direct experience into a tactile representation ①	Drawing strokes, making one's own art and illustrations using an early drawing kit
Braille Awareness	Braille is used to represent letters, words, and abstract ideas; and can be experienced through reading, writing, incidental discovery, and systematic tactile exploration	Labeling of familiar objects or spaces with braille letters or words, or tactile symbols; games and activities to discover places in a familiar environment where braille might be encountered, both personalized (home) and commercial (community)

Skill	Defined	Example(s)
Book Handling Skills	Understanding the purpose of a book and its parts; carefully handling and using the book as both a tool and a source of social learning/interactive pleasure. ④	Book orientation, title/author, location of text/pictures and differences between them, understanding of top-to-bottom and left-to-right progression, full-page exploration, page-turning, beginning/middle/end of the story, location of page numbers, familiarity with textures, use of textures for symbolic representation



## Basic Tactile Literacy

Skill	Defined	Example(s)
Line Tracking	Trace different types of tactile lines and paths	Dotted, solid, dashed
Systematic Page Scanning	Exploring/searching in an organized manner	Top to bottom, left to right, clockwise, etc.
Recognition of Braille Symbols	Braille letters have meaning, represent sounds, and can be combined to create words  ② ③ ④	Pre-braille books, textured symbols, experience books, introduction to braille symbols as representations of sounds or beginning of name or correspondence to favorite activities
Systematic Graphic Scanning	Explore a tactile display in a systematic fashion	Top to bottom, left to right, clockwise, etc.; part-to-whole and whole-to-part; search for familiar symbols, patterns, and formats; note differences in lines/textures; anticipate meaning; identify unfamiliar aspects needing explanation (i.e., "What is this?")
Creating Graphics	Ability to create, draw, and embellish graphics.	Variety of tactile drawing/art materials and methods either as stand-alone tools or in combination with each other
Refreshable Braille	Accessing braille using digital methods and increasingly complex electronic tools that must be handled with care.	Learning devices with braille output; one-line refreshable braille display with varying number of cells; braille notetaker with one-line refreshable braille display and 8-key/QWERTY keyboard

## Advanced Tactile Literacy

Skill	Defined	Example(s)
Using Keys/Legends	Braille letters or shape-based symbols have meanings in tactile graphics that systematically represent/convey complex information.	Symbols, line paths, textures, and/or braille labels are used to find meaning in the accompanying graphic(s); different levels/thicknesses of lines or textures can have different meanings
Reading Maps	Small and large environments can be represented and described in a 2D format using shapes, symbols, textures, and braille	Ready-made tactile maps, templates for designing tactile maps
Reading Charts and Tables	Mathematical and other information can be simplified, represented, conveyed, and compared through a variety of specialized print and braille formats	Systematic progression of tactile charts and tables that range from the simple to the complex; can include braille text only or incorporate the use of symbols and/or simple illustrations; variety of print and braille formats encountered in the early and later elementary grades
Familiarity with Digital Tools to Create Tactile Graphics	Methods used to create tactile graphics with commercial/digital (braille and tactile graphics producers)	Thermography, embossed paper, thermoform, collage, interactive materials
Graphicacy Skills Using Refreshable Braille	Navigation of tactile graphics produced on a multi-line refreshable braille device	Multi-line refreshable devices with braille text and notetaking capability; multi-line refreshable device with tactile graphics and dynamic braille capability

# Data Collection Sheets

## Emergent Tactile Literacy Skills

### ***Cognitive Concepts:***

Spatial Awareness, Part-Whole Relationships, Symbolic Representations

Skill	Date	Date	Date
Exploratory Skills			

Notes:

Hand/Motor Skills			
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Notes:

Concept Development			
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Notes:

Cognitive Skills			
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Notes:

Surface Discrimination			
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Notes:

Shape Discrimination			
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Notes:

Size Discrimination			
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Notes:

Recognize relationships of parts			
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Notes:

Tactile Image Exploration			
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Notes:

Tactile Representation			
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Notes:

Braille Awareness			
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Notes:

Book Handling Skills			
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Notes:

# Basic Tactile Literacy Skills

## ***Cognitive Concepts***

Part-Whole Relationships, Symbolic Representation, Understanding

Skill	Date	Date	Date
Line Tracking			

Notes:

Systematic Page Scanning			
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Notes:

Recognition of Braille Symbols			
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Notes:

Systematic Graphic Scanning			
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Notes:

Creating Graphics			
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Notes:

Refreshable Braille			
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Notes:

# Advanced Tactile Literacy Skills

## *Cognitive Concepts*

Understanding Perspective, Transition from 3D to 2D

Skill	Date	Date	Date
Using Keys/Legends			

Notes:

Reading Maps			
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Notes:

Reading Charts and Tables			
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Notes:

Familiarity with digital tools to create tactile graphics			
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Notes:

Graphicacy Skills Using Refreshable Braille			
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Notes:

## **Linking APH Products through the Tactile Skills Matrix to Foster Tactile Skill Development**

APH Products which support the development of tactile learning skills can be found on the [Tactile Skills Matrix Website](#) by clicking on the links below. Products for skills without links can be found embedded throughout the Tactile Skills Matrix webpages.

Please note that in the future, you may find changes as research and product development evolves.

[Exploratory Skills](#)

[Hand/Motor Skills](#)

[Concept Development](#)

Cognitive Skills

[Surface Discrimination](#)

[Shape Discrimination](#)

Size Discrimination

[Recognize Relationship of Parts](#)

[Tactile Image Exploration](#)

[Tactile Representation](#)

[Braille Awareness](#)

Book Handling Skills

[Line Tracking](#)

[Systematic Page Scanning](#)

Recognition of Braille Symbols

Systematic Graphic Scanning

[Creating Graphics](#)

Refreshable Braille Display

[Using Keys/Legends](#)

[Reading Maps](#)

[Reading Carts and Tables](#)

Familiarity with Digital Tools to Create Tactile Graphics

Graphicacy Skills Using Refreshable Braille



## **Foundations for Tactile Literacy Discussion Board**

The Discussion Board is a platform which empowers users to ask questions, share thoughts, consider new points of view, and engage in conversation with various people involved in the blindness and low vision field.

### [Latest Foundations for Tactile Literacy Topics](#)

The Discussion board uses the same account as your APH Hive account. If you have an account log in first, then follow the link to the discussion board. If you do not have an APH Hive account, register first and then follow the link to the discussion board. Instructions and links are included below.

#### **If you have an APH Hive account**

1. [Sign into your Hive account](#)
  - a. Forgot your password, follow the reset password link
2. [Go to the discussion board](#)

#### **If you do not have an APH hive account**

1. [Register for a Hive account](#)
2. [Go to the discussion board](#)

You can view the discussion board now, if you wish to reply to a post, select "Reply." A brief validation will occur between the hive and the discussion board. After a moment you will be able to respond to posts.

## Resources

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

#### **[Building an Early Tactile Foundation for Graphics Understanding](#)**

Description: This webinar is part 1 of *Tactile Graphics Literacy for Students with Visual Impairments: 4 Part Series*. Join this webinar to discover how instruction in concept and tactile skills contributes to the development of braille and graphics literacy skills for students with visual impairments.

#### **[Teaching Touch and Exploratory Skills to Prepare for Tactile Graphics Learning](#)**

Description: This webinar is part two of the Tactile Graphics Literacy for Students with Visual Impairments: 4 Part Series. Join this webinar to discover how to teach touch and exploratory skills to developing tactile learners. Learn how the development of exploratory skills serves as a foundation for braille readiness and meaningful tactile graphics experiences for students with visual impairments.

#### **[Strategies and Resources for the Instruction and Evaluation of Tactile Graphicacy Skills](#)**

Description: This webinar is part three of the Tactile Graphics Literacy for Students with Visual Impairments: 4 Part Series. Participate in this webinar to learn instructional strategies pertinent to effective graph reading and tactual perceptual skills. Explore methods for creation of tactile graphics and resources for evaluating tactile graphicacy capabilities of students with visual impairments.

#### **[The Monarch: Tactile Access to Digital Learning](#)**

Description: This webinar is part four of the Tactile Graphics Literacy for Students with Visual Impairments: 4 Part Series. Join this webinar to learn about the skills and background knowledge a student requires to benefit from the use of a multi-line, graphics-capable, refreshable braille display like the Monarch.

## Works Cited

Supporting research articles to anchor the matrix and foundational webinar series:

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- ② C. J., & Gorman, E. (2011). *Tactile and Object Exploration Among Young Children with Visual Impairments*. Center for Early Literacy Learning (CELL) Reviews, Vol. 4 (No. 2), 1–9.  
[http://earlyliteracylearning.org/cellreviews/cellreviews\\_v4\\_n2.pdf](http://earlyliteracylearning.org/cellreviews/cellreviews_v4_n2.pdf)
- ③ Hathazi, A., & Bujor, M. (2013, December). *Development of Tactile Strategies and Use of Tactile Resources in Emergent Literacy at Children with Visual Impairment*. STUDIA UNIVERSITATIS BABEȘ-BOLYAI PSYCHOLOGIA-PAEDAGOGIA, Vol. 58 (LVIII)(No. 2), 41–51.
- ④ Curtin, L., Lewis, D., & Holloway, L. (2019). *Documenting Tactile Graphicacy*. Journal of the South Pacific Educators in Visual Impairments, Vol. 12(No. 1), 82–98. <http://www.spevi.net>
- ⑤ McComiskey, A. (1996, May). The Braille Readiness Skills Grid: A Guide to Building a Foundation for Literacy. *Journal of Visual Impairment & Blindness*, 90(3), 190–193.  
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