

Drag Vertical

Action

- 1-finger drag is used to explore and navigate the screen while listening to VoiceOver announcements.
- **Vertical dragging** involves moving a finger in a straight line from the top to the bottom of the screen.

Why Is The Vertical Drag Gesture Important?

Touchscreen devices offer a key advantage over traditional computers: users always know **where their finger is physically located** on the screen.

Key benefits:

- Enhances spatial awareness and mental mapping – Children learn to associate an item's position with its spatial location and apply the correct terminology (e.g., top, middle bottom, left right).
- Develops essential navigation skills: Practicing vertically dragging helps children gain confidence in navigating digital interfaces, apps and menus.
- Supports learning in technology, math, and Orientation & Mobility – Understanding screen layouts, developing mental maps, and applying structured navigation are essential for STEM education and fostering independent travel skills.

App developers use predictable layouts when designing apps. Understanding these layouts helps children efficiently navigate screens, especially when items are:

- Aligned in columns (e.g., menus, word lists, or vertical grids)
- Positioned in corners or along edges (e.g., navigating from the top-left to bottom-left)
- Organized in a grid format (e.g., iPad's Home Screen app icons)

Example:

Children developing a mental map of the iPad Home Screen layout can use vertical dragging to navigate apps in columns efficiently.

When teaching a child to drag top to bottom or bottom to top, it is essential to introduce the concept of columns and the terminology associated with vertical navigation.

Why Are Columns Important?

- Crucial for reading tactile and digital graphs, charts, and structured data.
- Help children navigate column-based layouts in apps, grids, and spreadsheets.

Use tactile activities to introduce column concepts before transitioning to digital screens.

Prerequisites

Before introducing **dragging vertically**, children should first learn:

- The drag gesture (including dragging in a straight horizontal line)
- Split tap gesture
- Understanding spatial locations on the screen
- Recognizing rows
- Dragging vertically with tactile materials

Warm Up Activities

The following warm up activities help prepare children for vertical dragging:

- Tickle Touch (builds light touch sensitivity)
- Coin Hockey Drag (practices controlled dragging—first horizontally, then vertically)
- Straight Line Tactile Activities (tracing straight horizontal then vertical lines)

Physical Gesture

To perform the correct drag gesture:

- Hover the hand slightly above the screen with a relaxed, open palm
- Drop the index finger lightly onto the screen
- Drag in a straight line from top to bottom or bottom to top
- Move only the finger for short drags; move the hand and arm for longer drags
- Listen actively to VoiceOver as it announces items along the path

Modifications

Young children developing finger isolation may initially make a fist with only the index finger extended. As dexterity improves, they should transition to:

- An open palm position with relaxed fingers spread slightly apart
- Using only the index finger for controlled contact

Sonification

Sonification is the use of non-speech audio cues to convey information or represent data. The VoiceOver Playground app uses sonification to guide blind and low vision children in tracing a digital line.

- If the child's finger stays on the digital line, a sound plays.
- If the finger moves off the digital line, the sound stops.

Earcon

A “click” sound plays when dragging over items on the screen.

Common Issues

- **Lifting the finger:**
 - **Fix:** Encourage the child to keep contact with the screen. (Play the Coin Hockey warm up game.)
- **More than one finger on the screen:**
 - **Cause:** If using an open hand and fingers are stiff or touching, the longer middle finger may also touch the screen changing the gesture to a 2-finger gesture.
 - **Fix:** Relax the fingers – fingers should be slightly curved.
 - **Fix:** Spread the fingers slightly apart
 - **Fix:** Make a fist with only the index finger extended.
- **Drag speed too slow:**

Expectation: A consistent drag speed – slow enough to hear announcements, but fast enough to avoid lag.

 - **Fix:** Increase speed!
 - **Fix:** Encourage quick scanning by listening only to the beginning of announcements
 - **Tip:** Encourage the child to quickly find (x) on the screen.
 - **Cause: Pressing down too hard** on the iPad, causing the drag to be very slow. (In this case, the tip of the child's index finger may be bent back.)
 - **Fix:** Check for too much finger pressure – pressing hard can slow the movement
 - **Fix:** Relax the fingers and practice the Tickle Touch warm up activity.
 - **Cause: Slow processing speed:** Some children process auditory information slowly.
 - **Fix:** Increase VoiceOver speaking rate to help process information faster
- **Drag speed too fast:**
 - **Cause:** While most young children tend to be too slow, some children will move too quickly, missing VoiceOver announcements
 - **Fix:** Decrease speed!
 - **Fix:** Encourage the child to slow down and listen to announcements.

Lessons

Lesson 1: Vertical Dragging (Sonified)

- **Goal:** Learn how to drag in straight line from the top of the screen to the bottom using sonification.
- **Screen Layout:**
 - A beaver is halfway across the top of the screen..
 - The beaver's dam is halfway across the bottom of the screen.
 - A line goes from the beaver to the dam.
- **Breakdown:**
 - Lightly drag your finger across the top of the screen until you hear the beaver sound.
 - Move your down the screen in a straight line, following the “dadada” sound.
 - Stop when you hear the splash, signaling arrival at the beaver's dam.
 - If the sound stops, you have fallen off the line - return to the beaver and try again.
 - Complete the task three times to finish the lesson.

Lesson 2: Vertical Dragging (Unsonified)

- **Goal:** Learn how to drag in a straight line from the top of the screen to the bottom without sonification.
- **Screen Layout:**
 - A goose is halfway across the top of the screen.

- The pond is close to the bottom and halfway across the screen.
- **Breakdown:**
 - Lightly drag your finger across the top of the screen until you hear the goose sound.
 - Move your down the screen in a straight line.
 - Stop when you hear the splash, signaling arrival at the pond.
 - If the sound stops, you have fallen off the line - return to the goose and try again.
 - Complete the task three times to finish the lesson.

This structured approach to vertical dragging helps children develop spatial awareness, dragging vertically, and digital navigation skills. By progressing from sonified guidance to independent practice, children gain confidence in using vertical drag gestures for efficient screen navigation.